FIG. 1

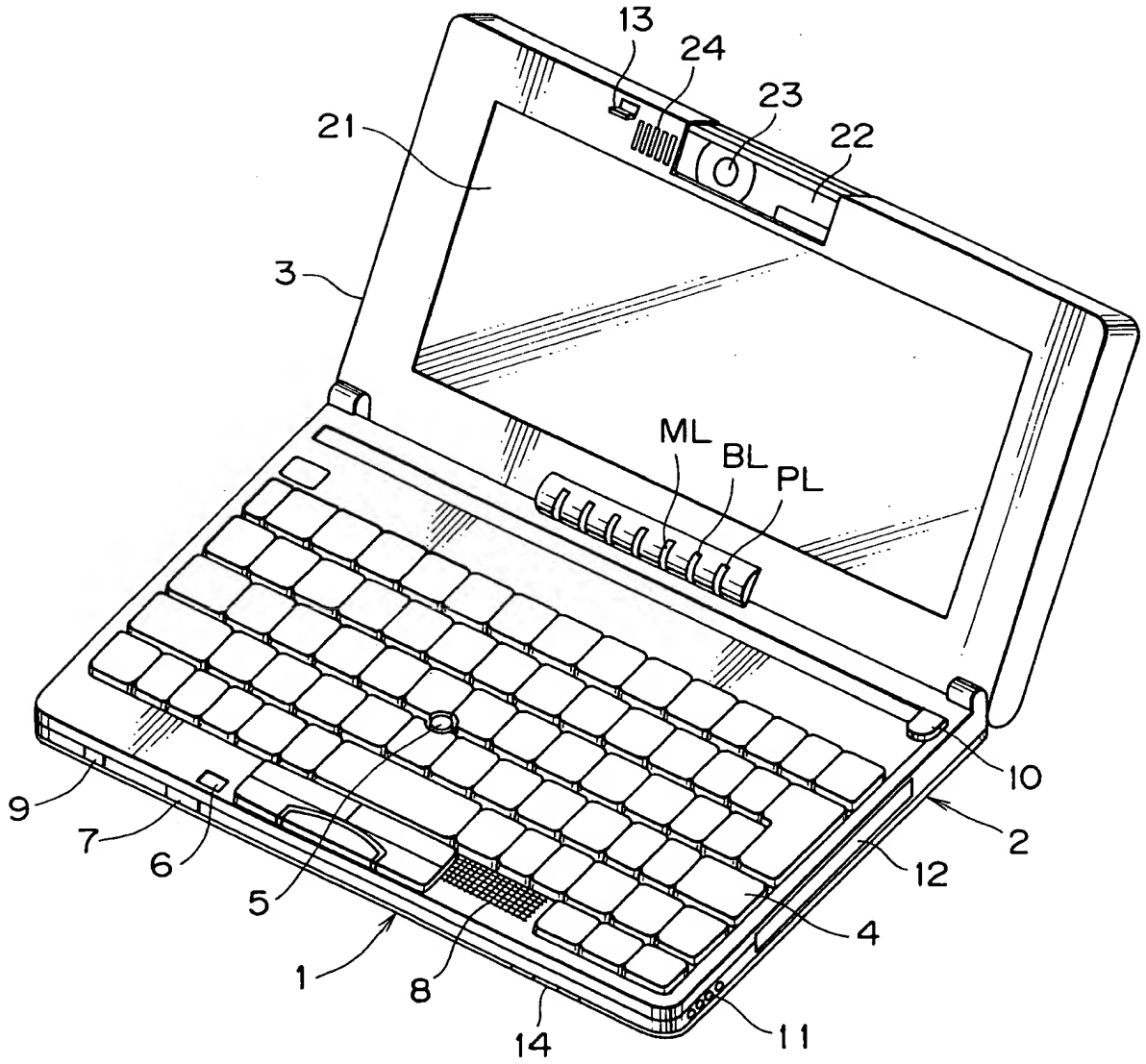


FIG. 2

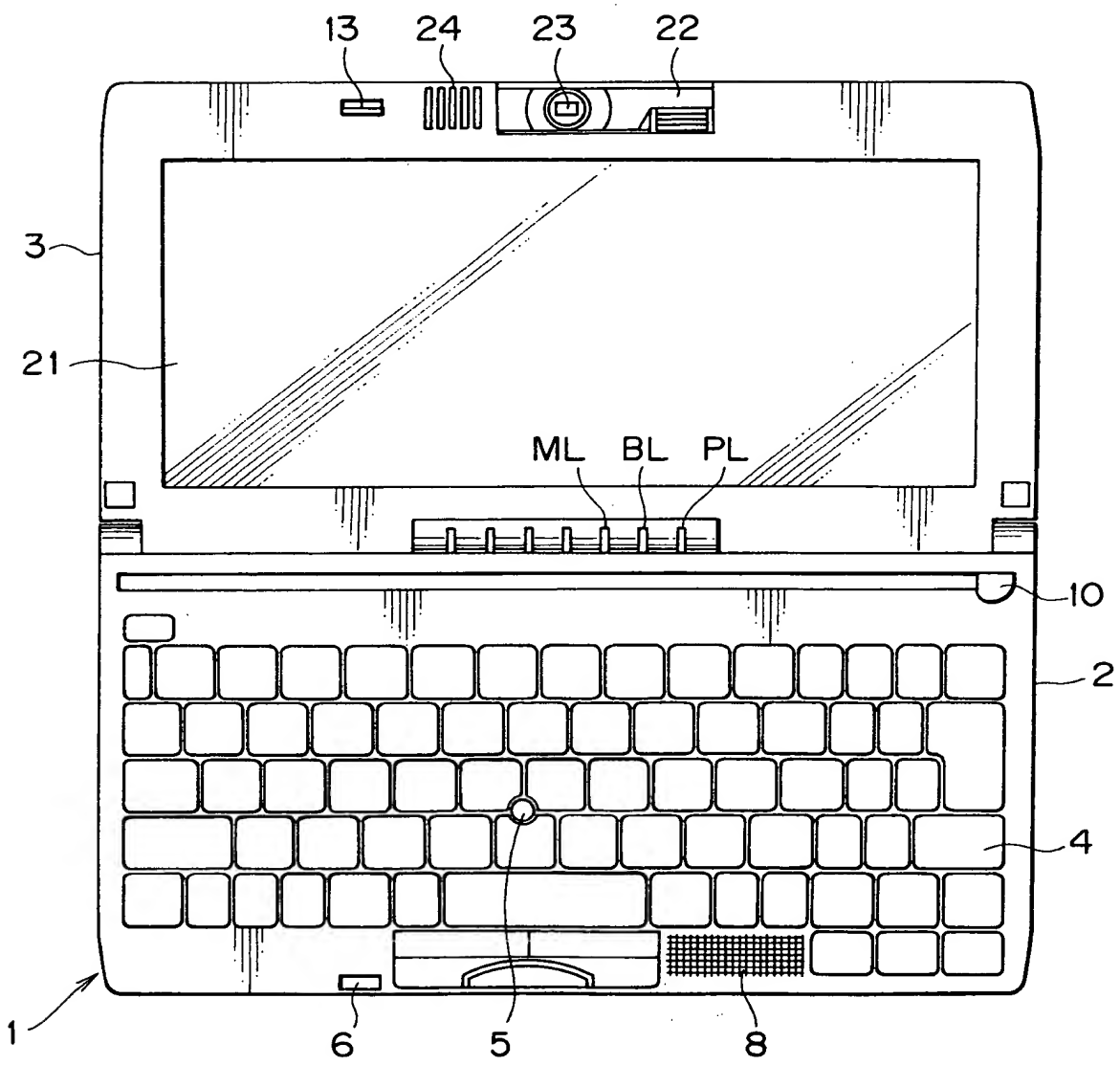


FIG. 3

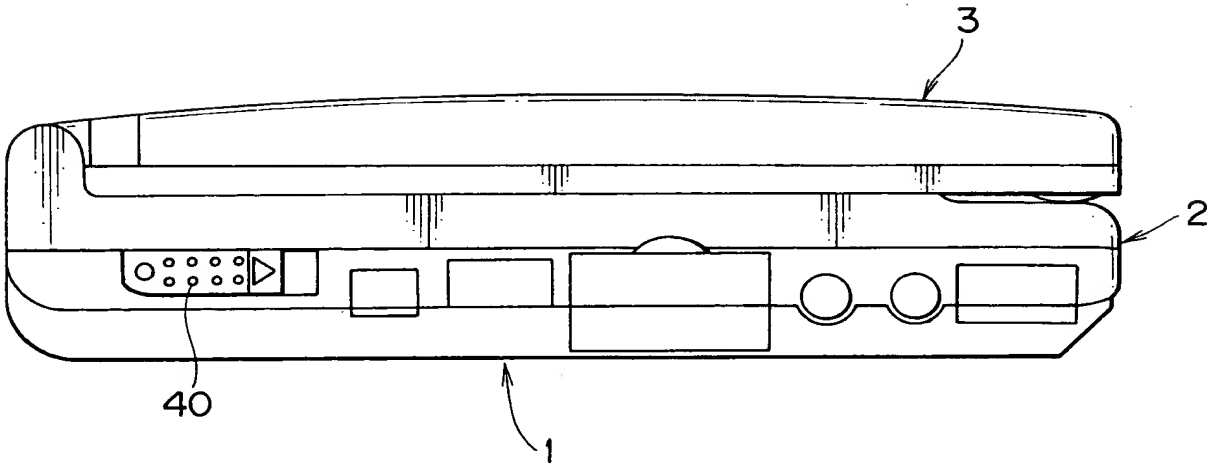


FIG. 4

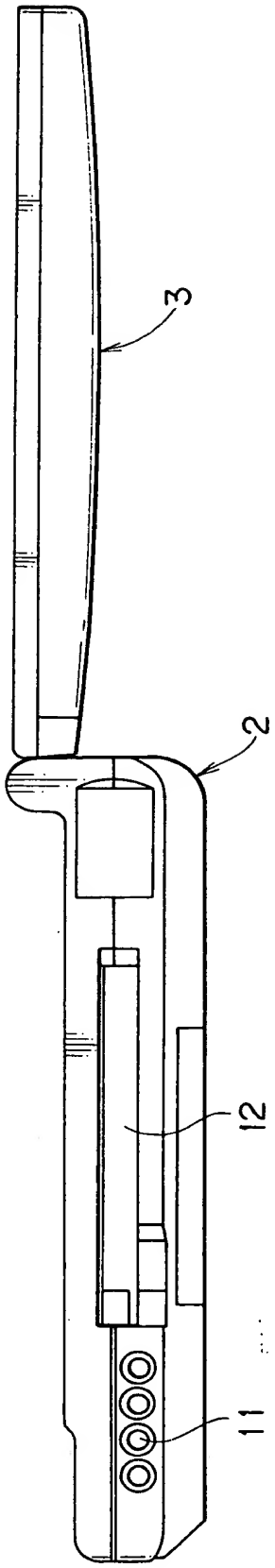


FIG. 5

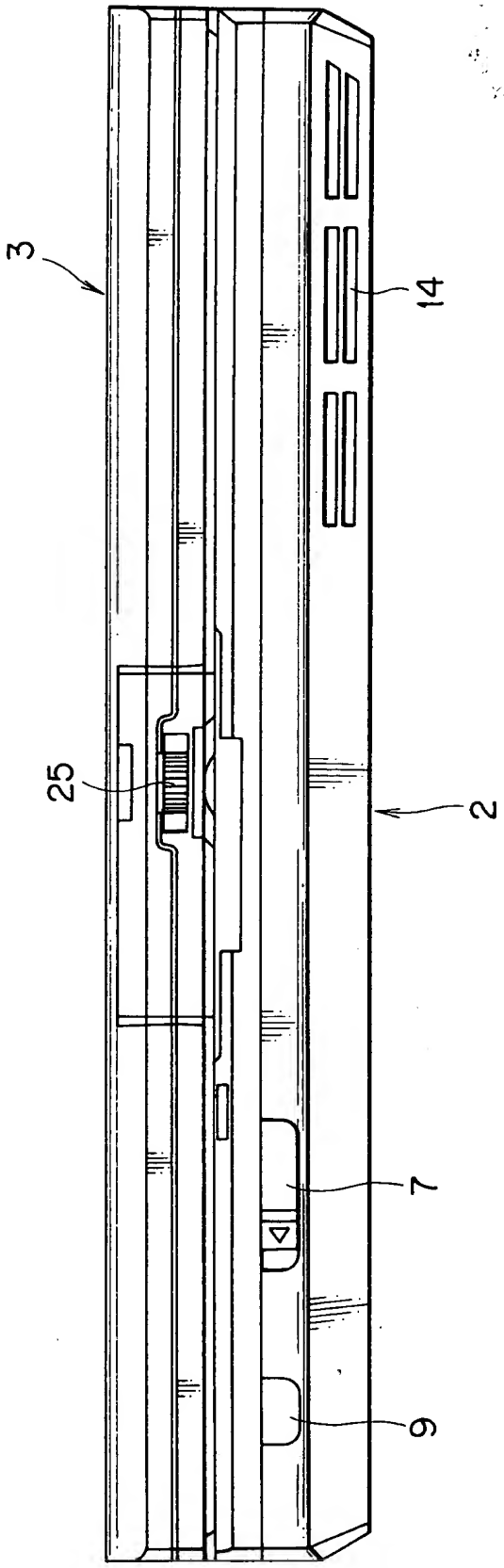


FIG. 6

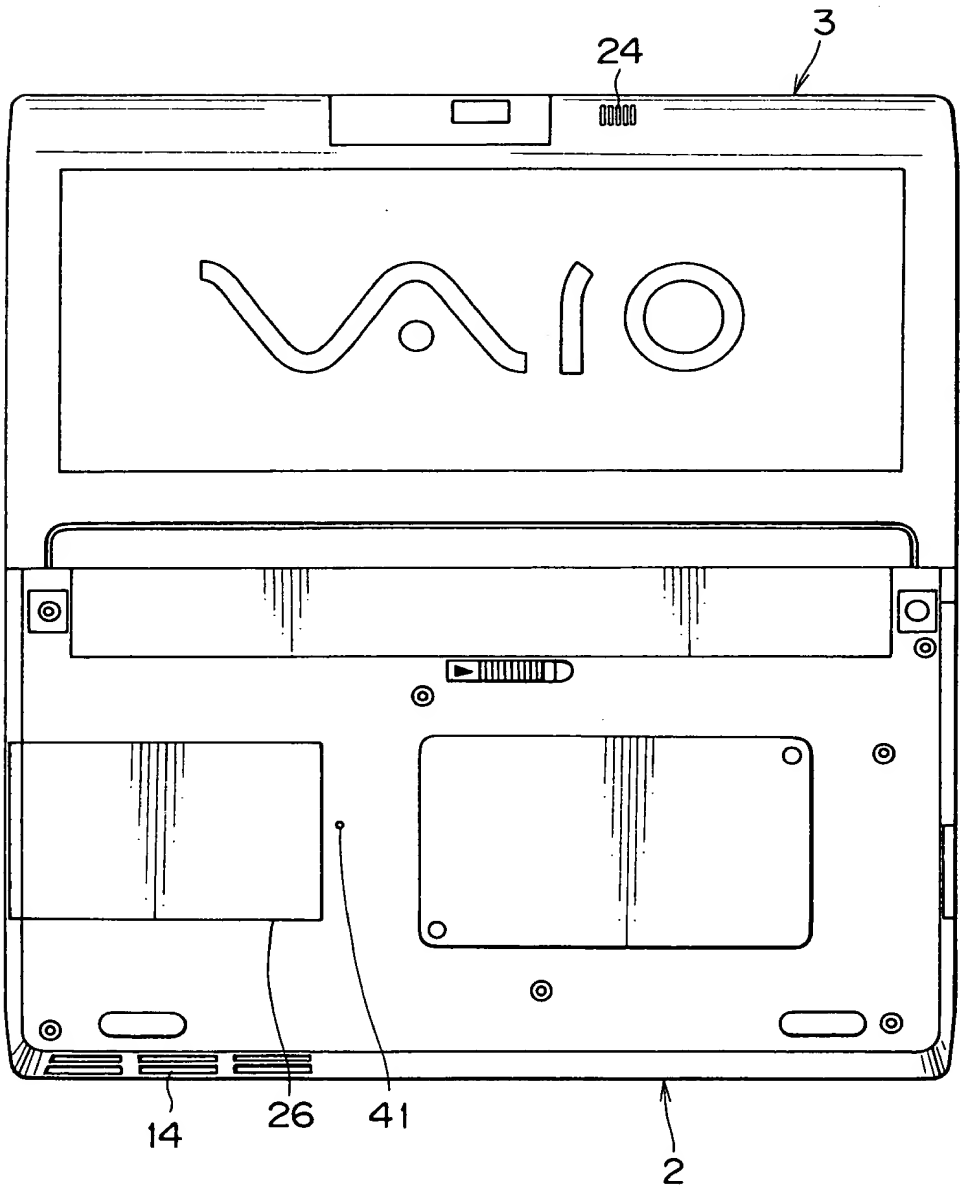


FIG. 7

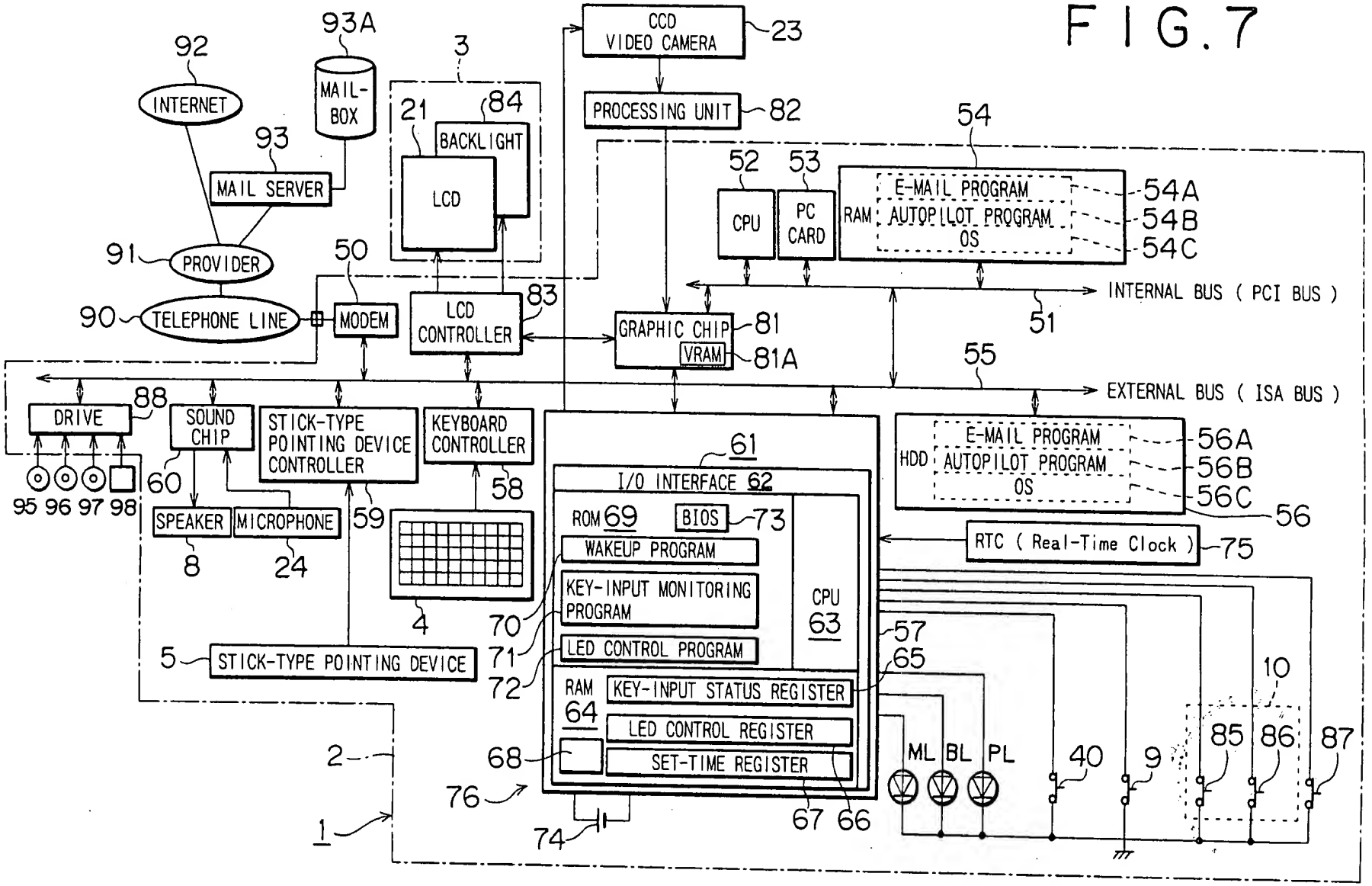

INTERNET
92
MAIL-BOX
93A
MAIL SERVER
93
PROVIDER
91
TELEPHONE LINE
90
MODEM
50
3
21
84
BACKLIGHT
LCD
LCD CONTROLLER
83
CCD VIDEO CAMERA
23
PROCESSING UNIT
82
GRAPHIC CHIP
81
VRAM
81A
54
52
CPU
53
PC CARD
RAM
E-MAIL PROGRAM
AUTOPILOT PROGRAM
OS
54A
54B
54C
INTERNAL BUS (PCI BUS)
51
55
EXTERNAL BUS (ISA BUS)
DRIVE
88
SOUND CHIP
STICK-TYPE POINTING DEVICE CONTROLLER
KEYBOARD CONTROLLER
95 96 97 98
60
58
SPEAKER
MICROPHONE
8
24
59
4
5
STICK-TYPE POINTING DEVICE
61
I/O INTERFACE 62
ROM 69
BIOS
73
WAKEUP PROGRAM
KEY-INPUT MONITORING PROGRAM
LED CONTROL PROGRAM
70
71
72
CPU 63
RAM 64
KEY-INPUT STATUS REGISTER
LED CONTROL REGISTER
SET-TIME REGISTER
68
76
74
67
66
57
65
HDD
E-MAIL PROGRAM
AUTOPILOT PROGRAM
OS
56A
56B
56C
56
RTC (Real-Time Clock)
75
ML
BL
PL
40
9
10
85
86
87
2
1

FIG.8

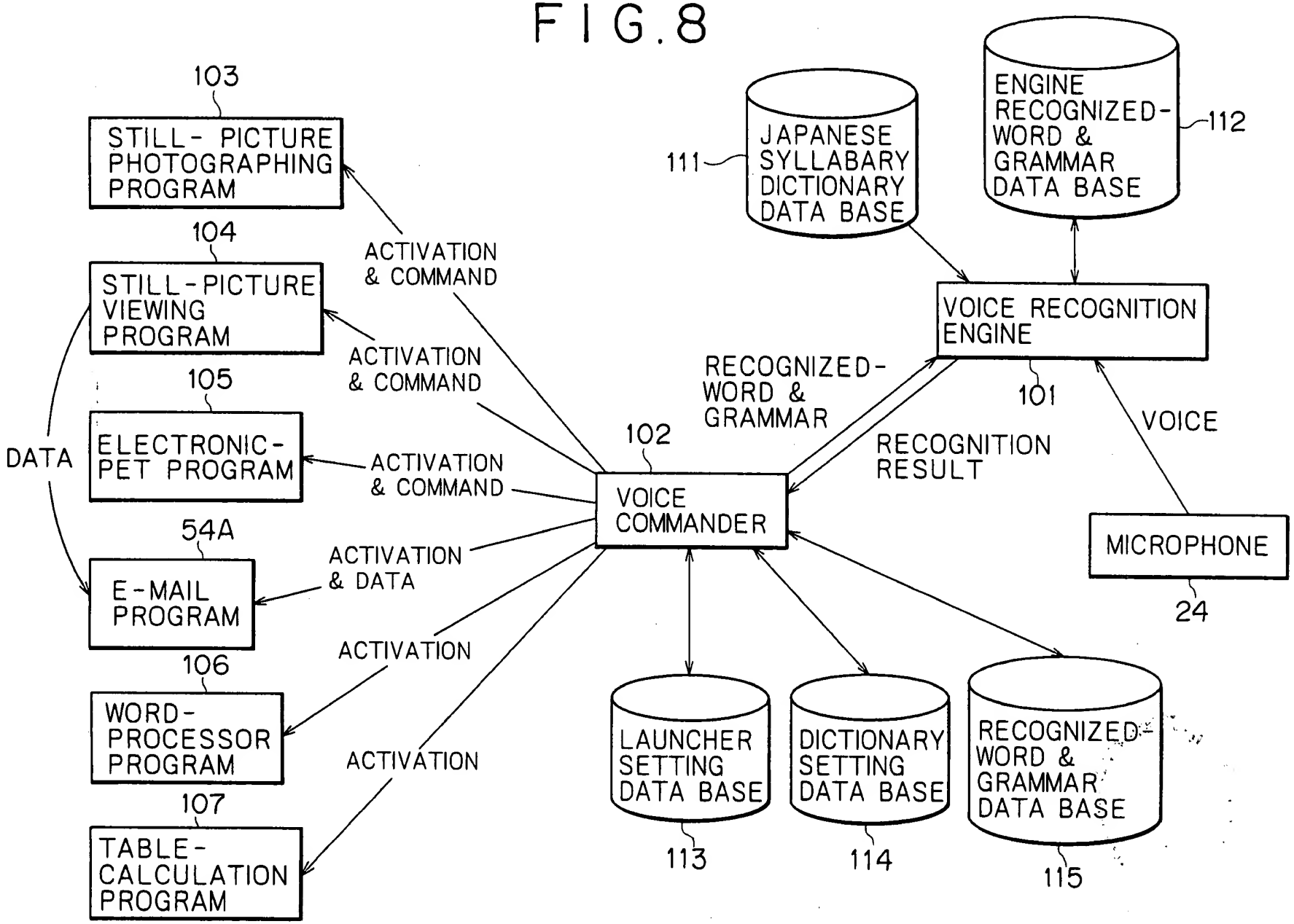

103
STILL- PICTURE PHOTOGRAPHING PROGRAM
104
STILL-PICTURE VIEWING PROGRAM
105
ELECTRONIC-PET PROGRAM
54A
E-MAIL PROGRAM
106
WORD-PROCESSOR PROGRAM
107
TABLE-CALCULATION PROGRAM
DATA
ACTIVATION & COMMAND
ACTIVATION & COMMAND
ACTIVATION & COMMAND
ACTIVATION & DATA
ACTIVATION
ACTIVATION
102
VOICE COMMANDER
111
JAPANESE SYLLABARY DICTIONARY DATA BASE
ENGINE RECOGNIZED-WORD & GRAMMAR DATA BASE
112
VOICE RECOGNITION ENGINE
101
RECOGNIZED-WORD & GRAMMAR
RECOGNITION RESULT
VOICE
MICROPHONE
24
LAUNCHER SETTING DATA BASE
113
DICTIONARY SETTING DATA BASE
114
RECOGNIZED-WORD & GRAMMAR DATA BASE
115

FIG. 9

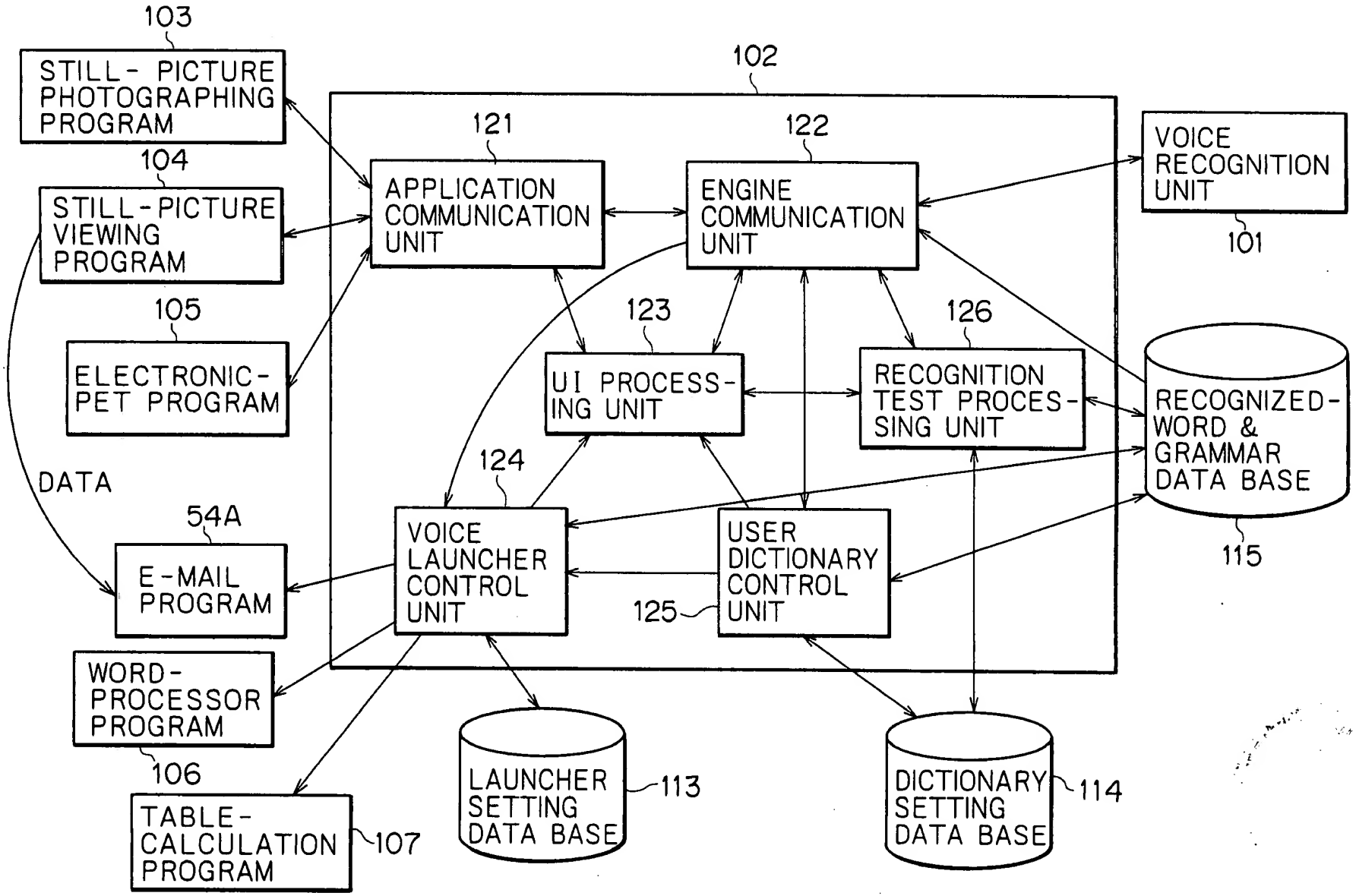

103
STILL- PICTURE PHOTOGRAPHING PROGRAM
104
STILL-PICTURE VIEWING PROGRAM
105
ELECTRONIC-PET PROGRAM
DATA
54A
E-MAIL PROGRAM
WORD-PROCESSOR PROGRAM
106
TABLE-CALCULATION PROGRAM
107
102
121
APPLICATION COMMUNICATION UNIT
122
ENGINE COMMUNICATION UNIT
123
UI PROCESS-ING UNIT
126
RECOGNITION TEST PROCES-SING UNIT
124
VOICE LAUNCHER CONTROL UNIT
USER DICTIONARY CONTROL UNIT
125
LAUNCHER SETTING DATA BASE
113
DICTIONARY SETTING DATA BASE
114
VOICE RECOGNITION UNIT
101
RECOGNIZED-WORD & GRAMMAR DATA BASE
115

FIG.10

```
[Grammar]
Type = cfg

[ 〈Start〉 ]
〈Start〉 = 〈Global〉
〈Start〉 =(SVCommand)

[(SVCommand)]
102 = HELP
104 = PREVIOUS
104 = PREVIOUS PICTURE
105 = NEXT
105 = NEXT PICTURE
0×7fffffff= 〈SendMail〉

[ 〈SendMail〉 ]
〈SendMail〉 = SEND A MAIL TO  〈Email〉
〈SendMail〉 = MAIL

[ 〈Email〉 ]
〈Email〉 = " daddy@test.company.co.jp." PAPA

[ 〈Global〉 ]
〈Global〉 =(ChangeWin)
〈Global〉 =(VoiceCommand)

[(ChangeWin)]
6001 = STILL-PICTURE PHOTOGRAPHING PROGRAM
6002 = ELECTRONIC-PET PROGRAM
6004 = STILL-PICTURE VIEWING PROGRAM

[(VoiceCommand)]
1= 〈VCmd〉

[ 〈VCmd〉 ]
〈VCmd〉 = " C:¥¥shougi.exe"  SHOGI GAME
```

FIG.11

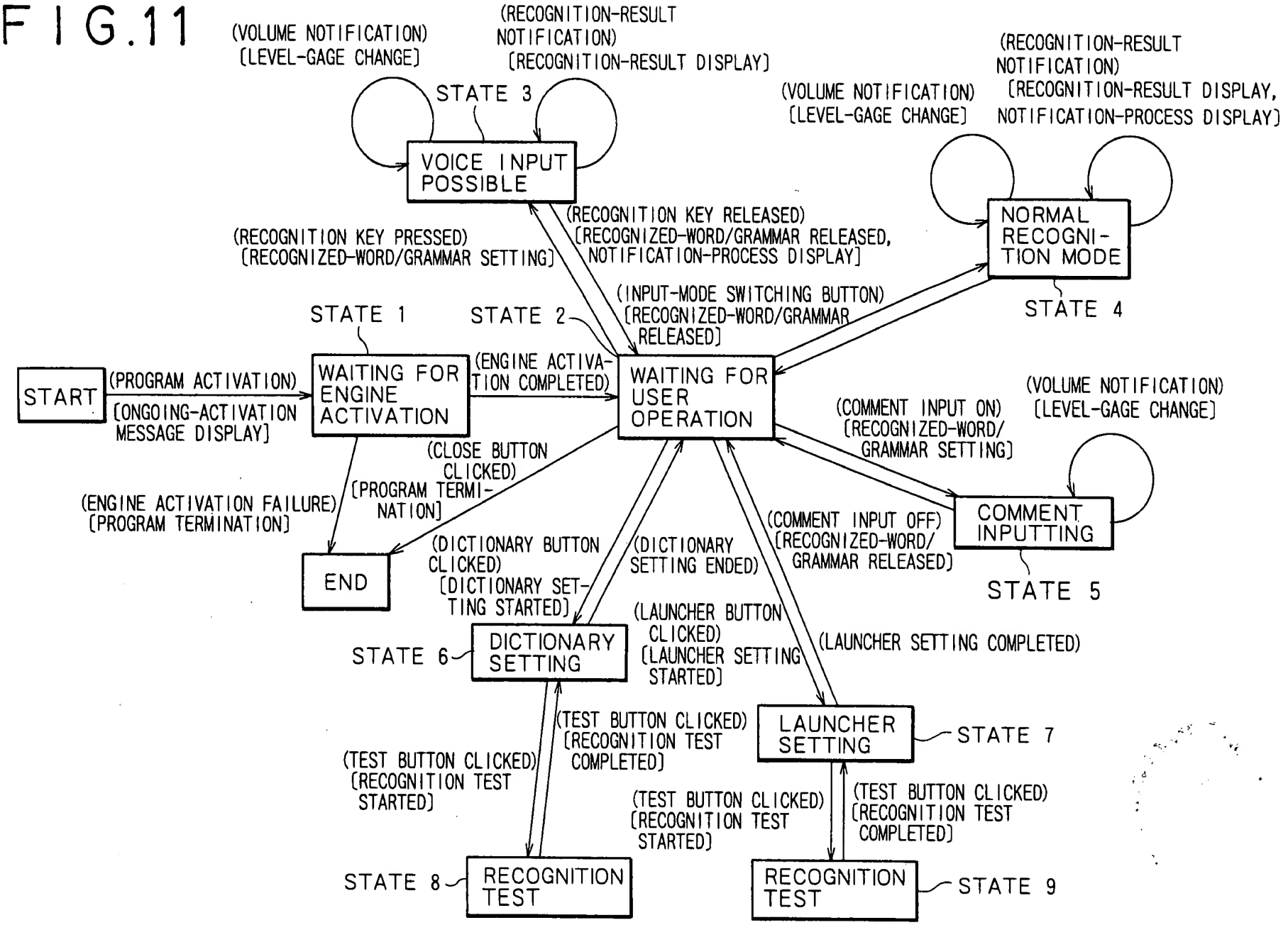

(VOLUME NOTIFICATION)
[LEVEL-GAGE CHANGE]
(RECOGNITION-RESULT NOTIFICATION)
[RECOGNITION-RESULT DISPLAY]
STATE 3
VOICE INPUT POSSIBLE
(VOLUME NOTIFICATION)
[LEVEL-GAGE CHANGE]
(RECOGNITION-RESULT NOTIFICATION)
[RECOGNITION-RESULT DISPLAY, NOTIFICATION-PROCESS DISPLAY]
NORMAL RECOGNITION MODE
STATE 4
(RECOGNITION KEY PRESSED)
[RECOGNIZED-WORD/GRAMMAR SETTING]
(RECOGNITION KEY RELEASED)
[RECOGNIZED-WORD/GRAMMAR RELEASED, NOTIFICATION-PROCESS DISPLAY]
(INPUT-MODE SWITCHING BUTTON)
[RECOGNIZED-WORD/GRAMMAR RELEASED]
STATE 1
STATE 2
START
(PROGRAM ACTIVATION)
[ONGOING-ACTIVATION MESSAGE DISPLAY]
WAITING FOR ENGINE ACTIVATION
(ENGINE ACTIVATION COMPLETED)
WAITING FOR USER OPERATION
(VOLUME NOTIFICATION)
[LEVEL-GAGE CHANGE]
(COMMENT INPUT ON)
[RECOGNIZED-WORD/GRAMMAR SETTING]
(CLOSE BUTTON CLICKED)
[PROGRAM TERMINATION]
(ENGINE ACTIVATION FAILURE)
[PROGRAM TERMINATION]
END
COMMENT INPUTTING
(COMMENT INPUT OFF)
[RECOGNIZED-WORD/GRAMMAR RELEASED]
STATE 5
(DICTIONARY BUTTON CLICKED)
[DICTIONARY SETTING STARTED]
(DICTIONARY SETTING ENDED)
(LAUNCHER BUTTON CLICKED)
[LAUNCHER SETTING STARTED]
(LAUNCHER SETTING COMPLETED)
STATE 6
DICTIONARY SETTING
(TEST BUTTON CLICKED)
[RECOGNITION TEST COMPLETED]
LAUNCHER SETTING
STATE 7
(TEST BUTTON CLICKED)
[RECOGNITION TEST STARTED]
(TEST BUTTON CLICKED)
[RECOGNITION TEST STARTED]
(TEST BUTTON CLICKED)
[RECOGNITION TEST COMPLETED]
STATE 8
RECOGNITION TEST
RECOGNITION TEST
STATE 9

FIG.12

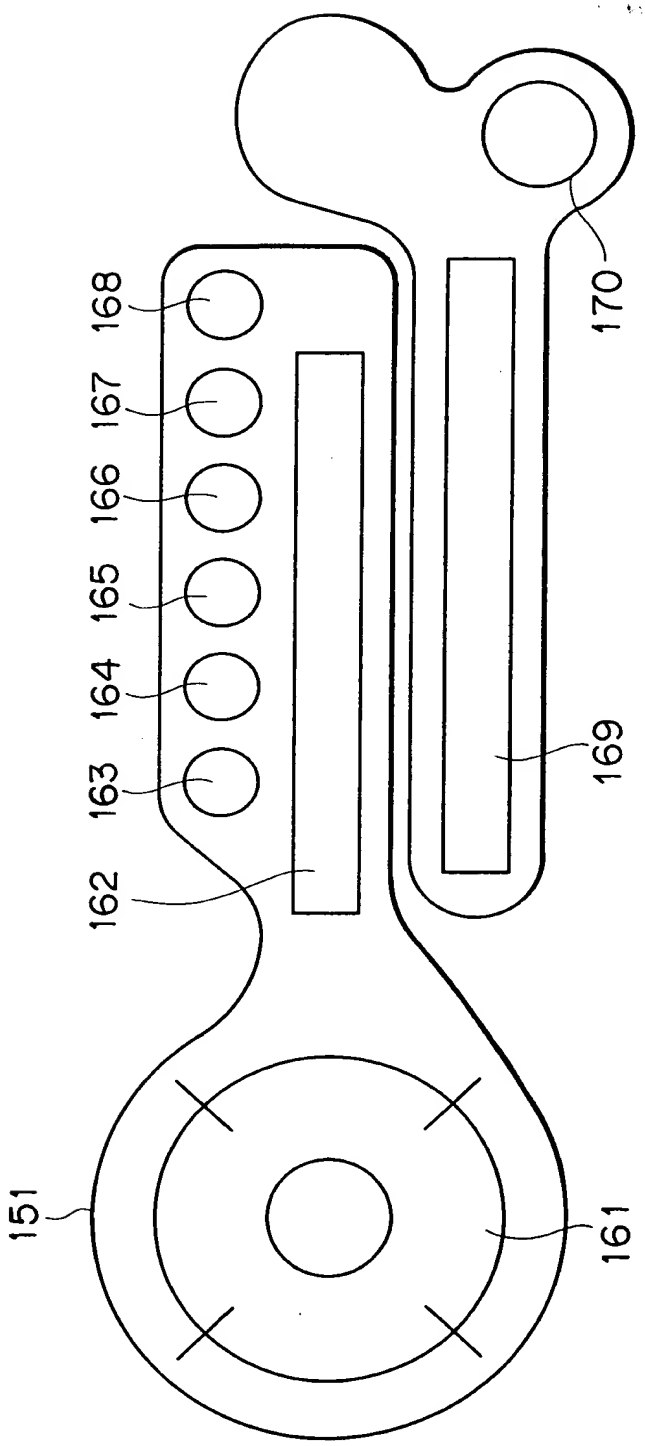


FIG.13

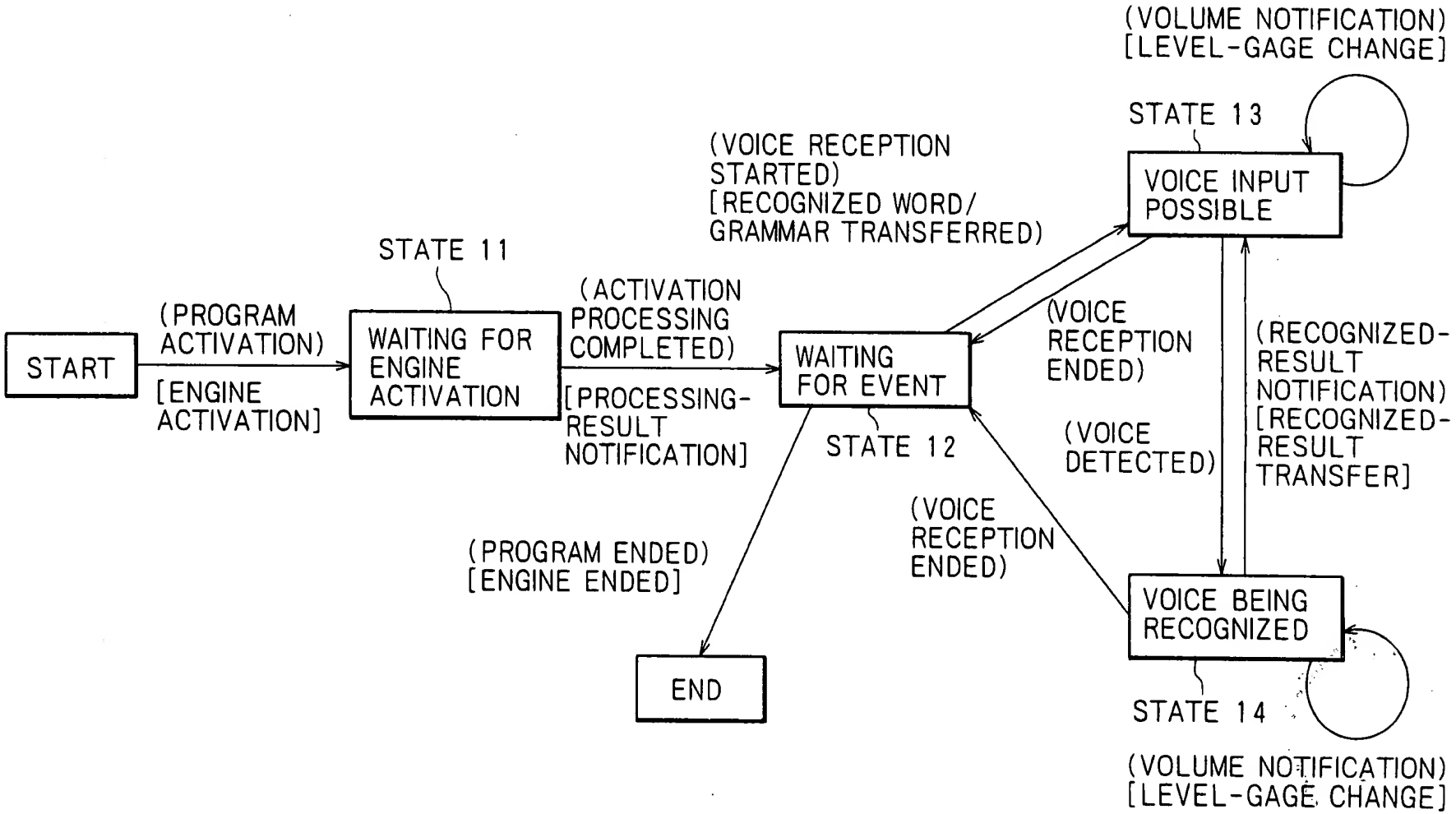

START
(PROGRAM ACTIVATION)
[ENGINE ACTIVATION]
STATE 11
WAITING FOR ENGINE ACTIVATION
(ACTIVATION PROCESSING COMPLETED)
[PROCESSING-RESULT NOTIFICATION]
WAITING FOR EVENT
STATE 12
(VOICE RECEPTION STARTED)
[RECOGNIZED WORD/ GRAMMAR TRANSFERRED)
STATE 13
VOICE INPUT POSSIBLE
(VOLUME NOTIFICATION)
[LEVEL-GAGE CHANGE]
(VOICE RECEPTION ENDED)
(VOICE DETECTED)
(RECOGNIZED-RESULT NOTIFICATION)
[RECOGNIZED-RESULT TRANSFER]
(PROGRAM ENDED)
[ENGINE ENDED]
END
(VOICE RECEPTION ENDED)
VOICE BEING RECOGNIZED
STATE 14
(VOLUME NOTIFICATION)
[LEVEL-GAGE CHANGE]

FIG.14

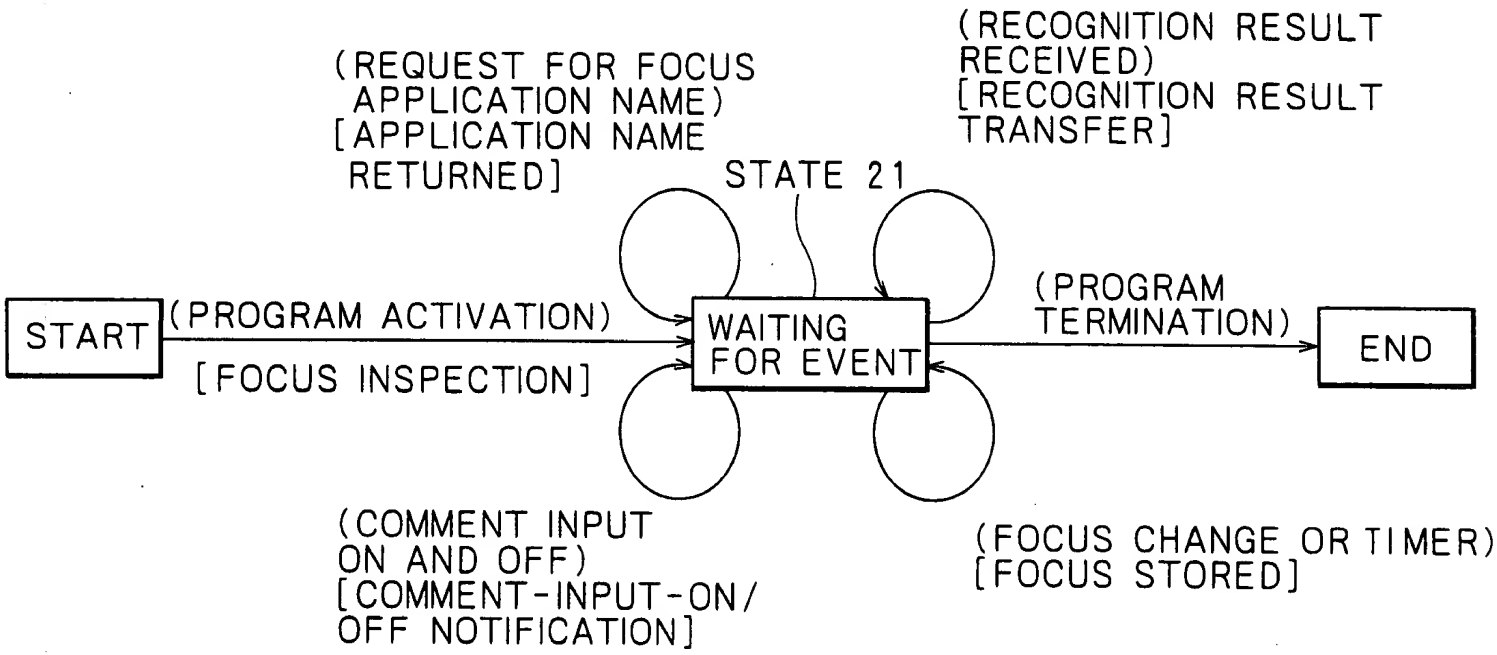

(REQUEST FOR FOCUS APPLICATION NAME)
[APPLICATION NAME RETURNED]
(RECOGNITION RESULT RECEIVED)
[RECOGNITION RESULT TRANSFER]
STATE 21
START
(PROGRAM ACTIVATION)
[FOCUS INSPECTION]
WAITING FOR EVENT
(PROGRAM TERMINATION)
END
(COMMENT INPUT ON AND OFF)
[COMMENT-INPUT-ON/OFF NOTIFICATION]
(FOCUS CHANGE OR TIMER)
[FOCUS STORED]

FIG.15

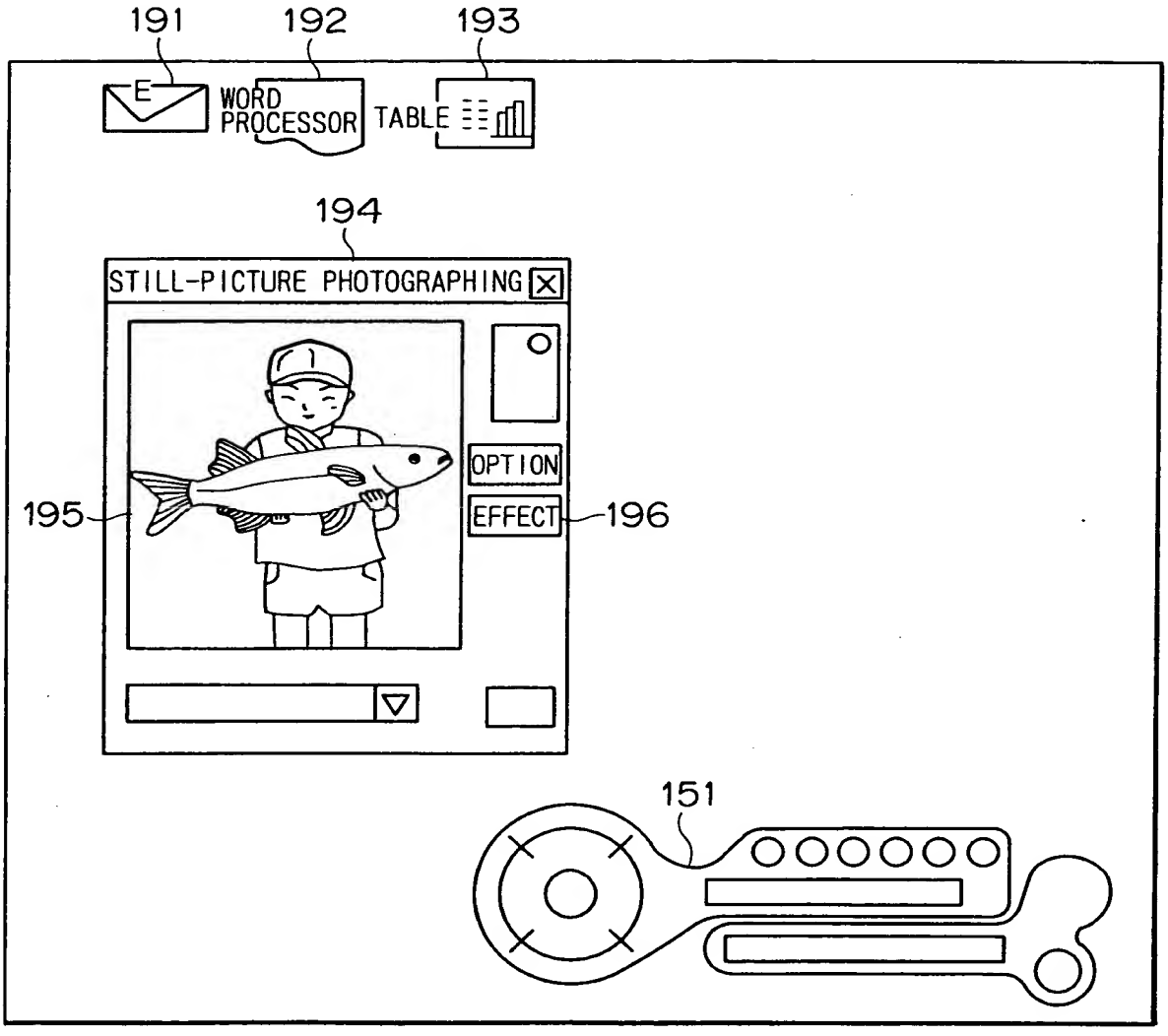

191
192
193
E
WORD PROCESSOR
TABLE
194
STILL-PICTURE PHOTOGRAPHING
OPTION
EFFECT
195
196
151

FIG.16

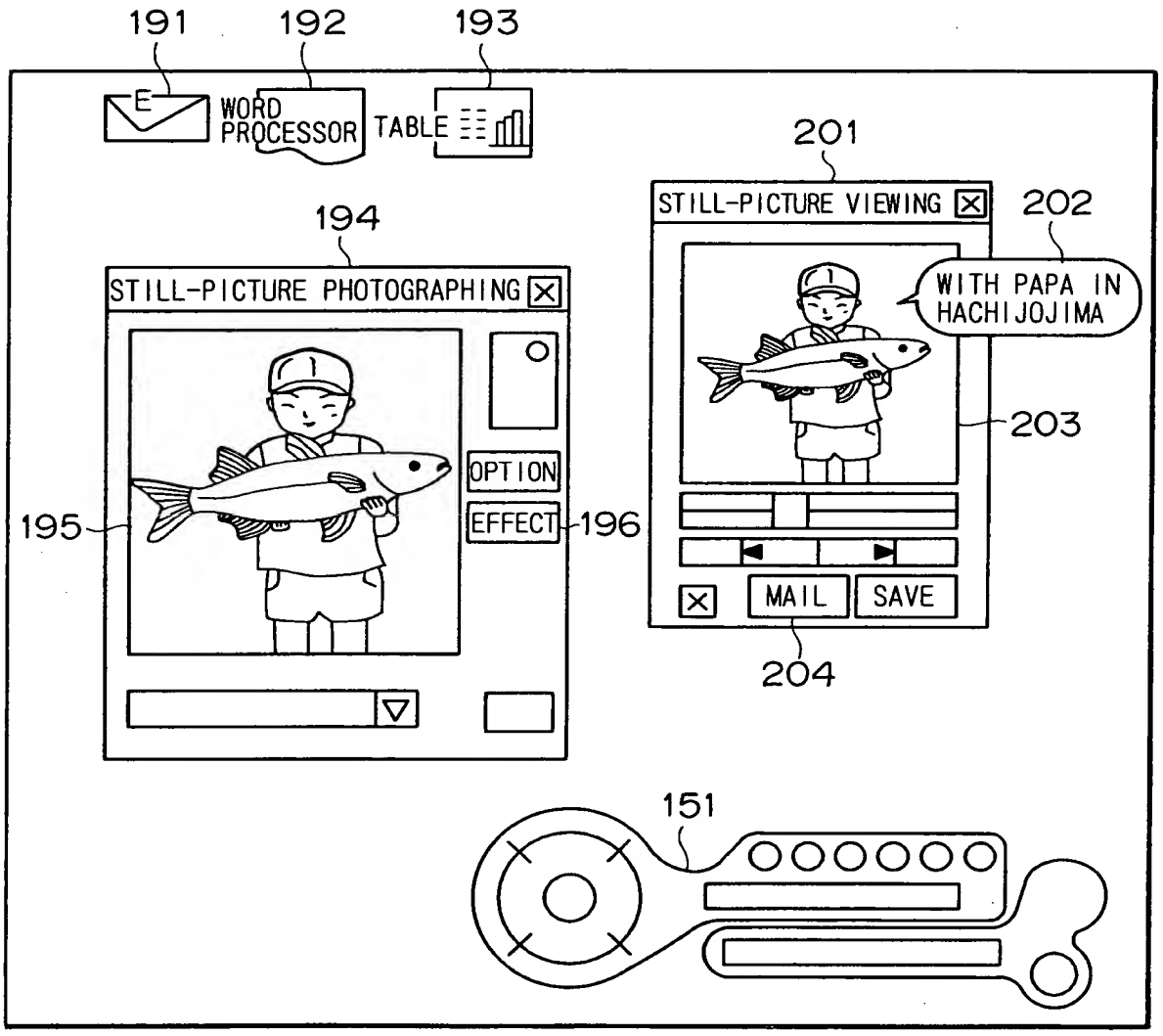

191
192
193
E
WORD PROCESSOR
TABLE
201
STILL-PICTURE VIEWING
202
WITH PAPA IN HACHIJOJIMA
194
STILL-PICTURE PHOTOGRAPHING
203
OPTION
EFFECT
195
196
MAIL
SAVE
204
151

FIG.17

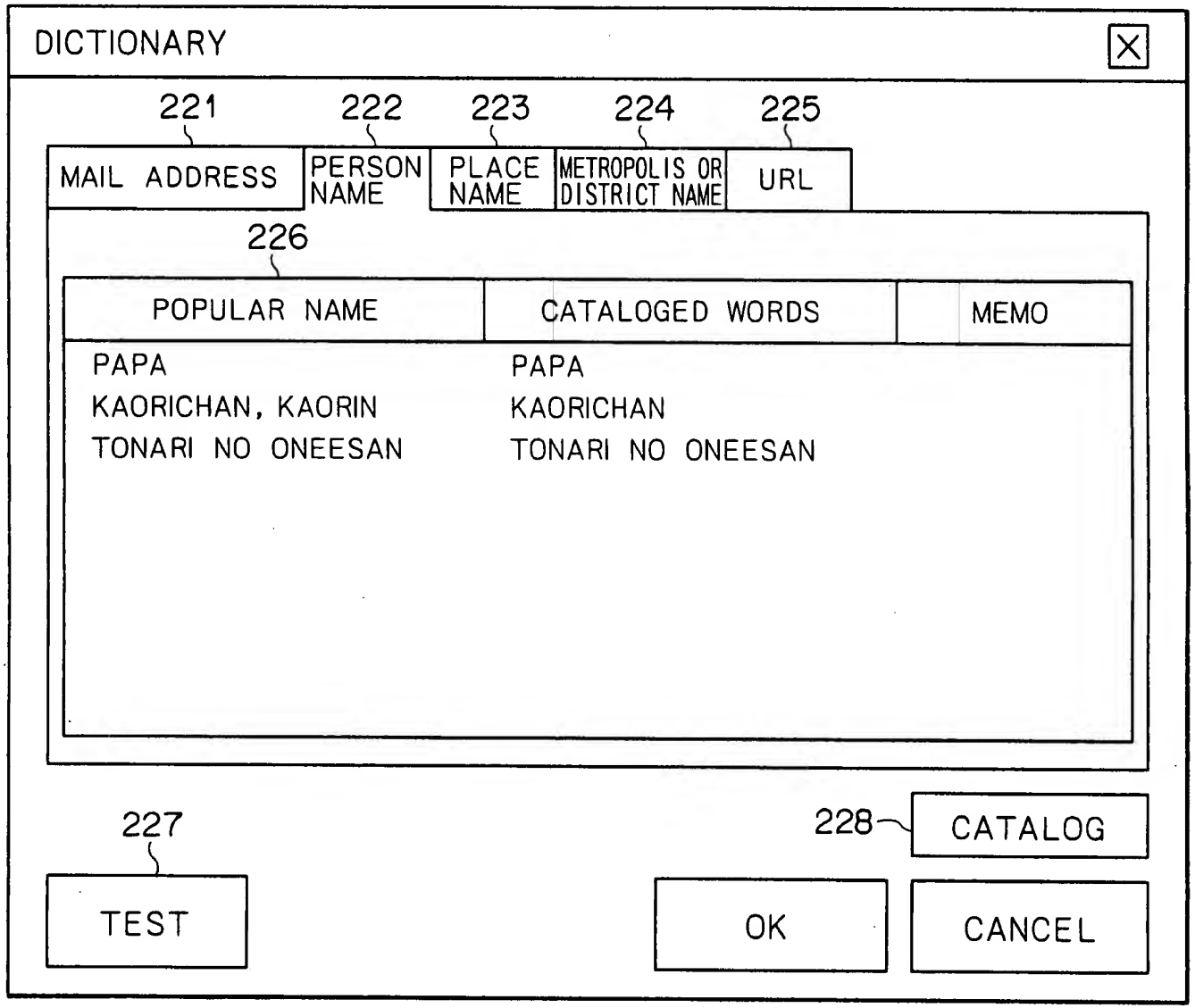

DICTIONARY
221
222
223
224
225
MAIL ADDRESS
PERSON NAME
PLACE NAME
METROPOLIS OR DISTRICT NAME
URL
226
POPULAR NAME
CATALOGED WORDS
MEMO
PAPA
PAPA
KAORICHAN, KAORIN
KAORICHAN
TONARI NO ONEESAN
TONARI NO ONEESAN
227
TEST
228
CATALOG
OK
CANCEL

FIG.18

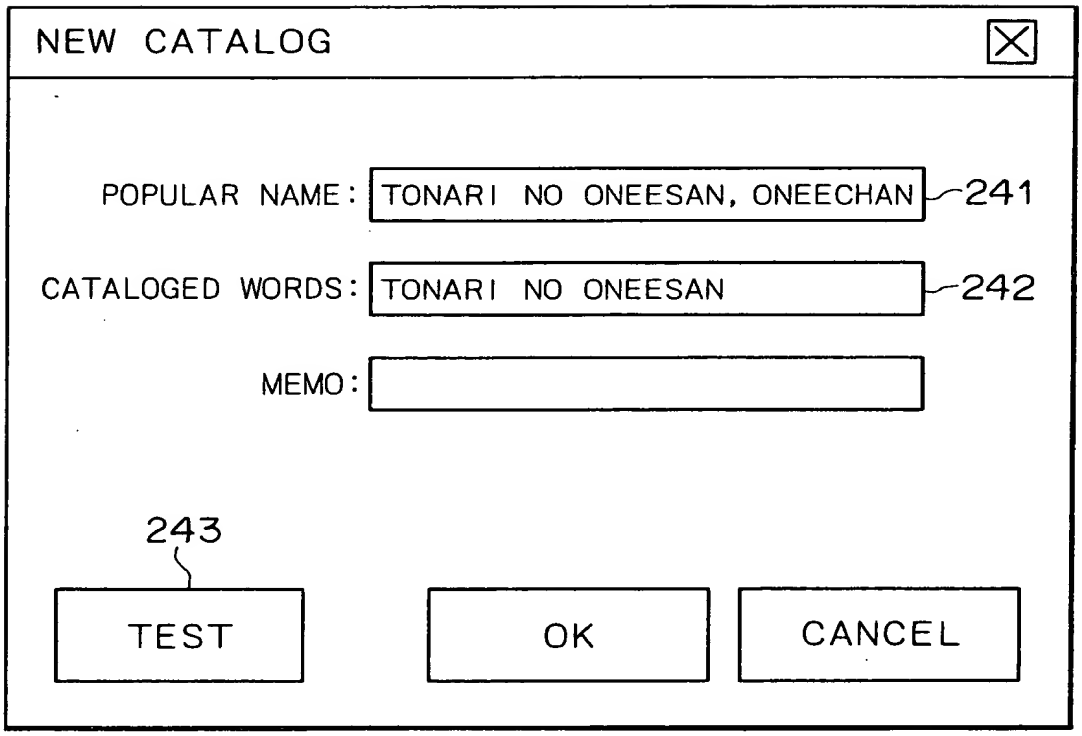

NEW CATALOG
POPULAR NAME:
TONARI NO ONEESAN, ONEECHAN
241
CATALOGED WORDS:
TONARI NO ONEESAN
242
MEMO:
243
TEST
OK
CANCEL

FIG.19

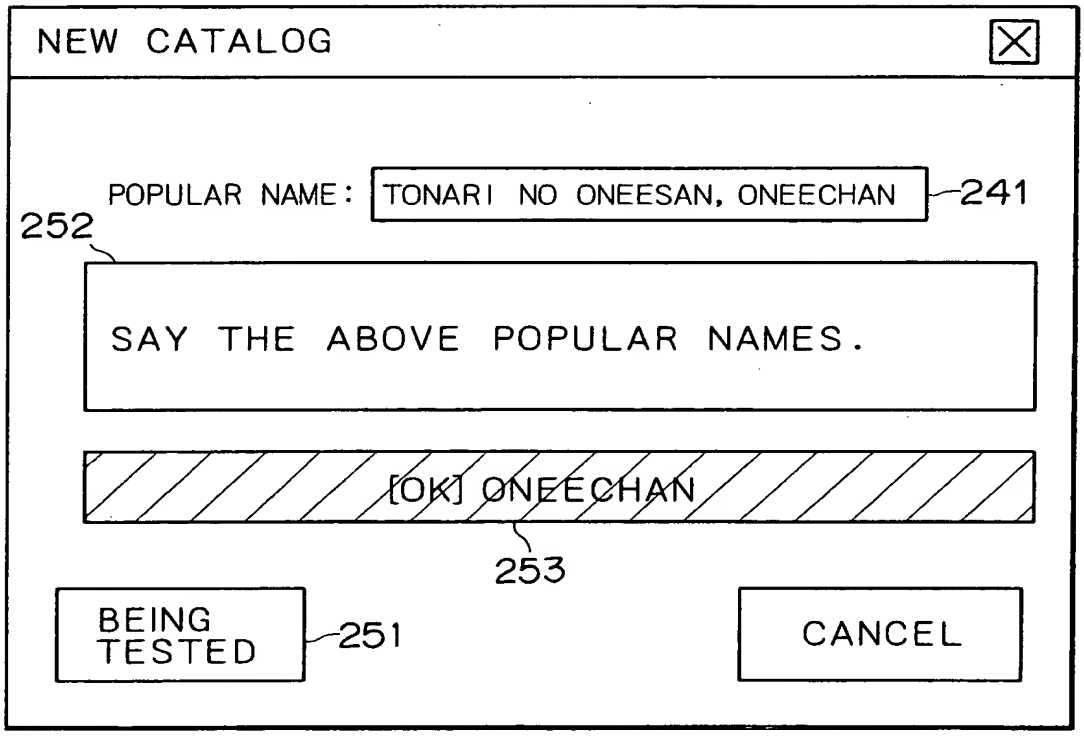

NEW CATALOG
POPULAR NAME:
TONARI NO ONEESAN, ONEECHAN
241
252
SAY THE ABOVE POPULAR NAMES.
[OK] ONEECHAN
253
BEING TESTED
251
CANCEL

FIG.20

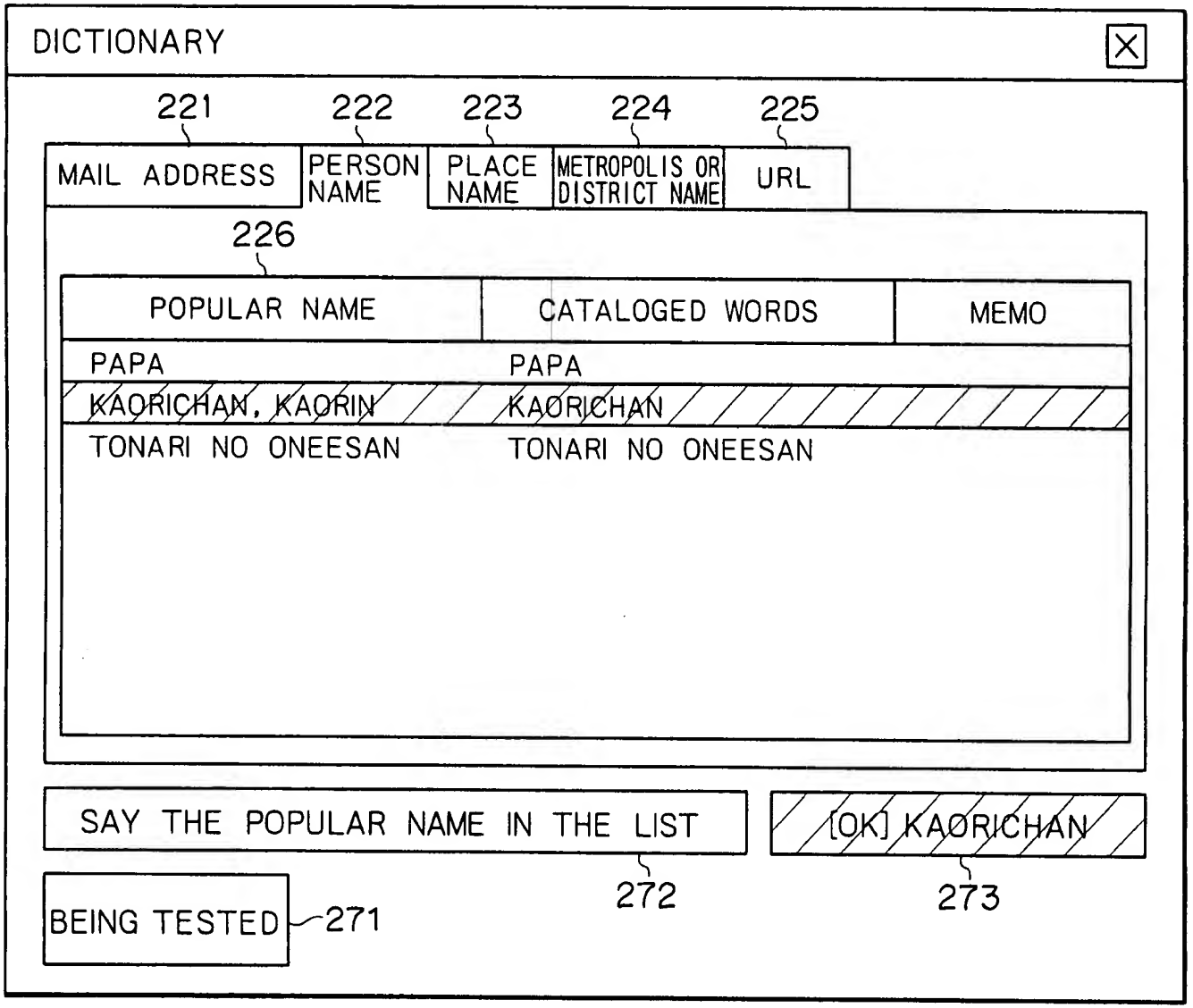

DICTIONARY
221
222
223
224
225
MAIL ADDRESS
PERSON NAME
PLACE NAME
METROPOLIS OR DISTRICT NAME
URL
226
POPULAR NAME
CATALOGED WORDS
MEMO
PAPA
PAPA
KAORICHAN, KAORIN
KAORICHAN
TONARI NO ONEESAN
TONARI NO ONEESAN
SAY THE POPULAR NAME IN THE LIST
[OK] KAORICHAN
272
273
BEING TESTED
271

FIG.21

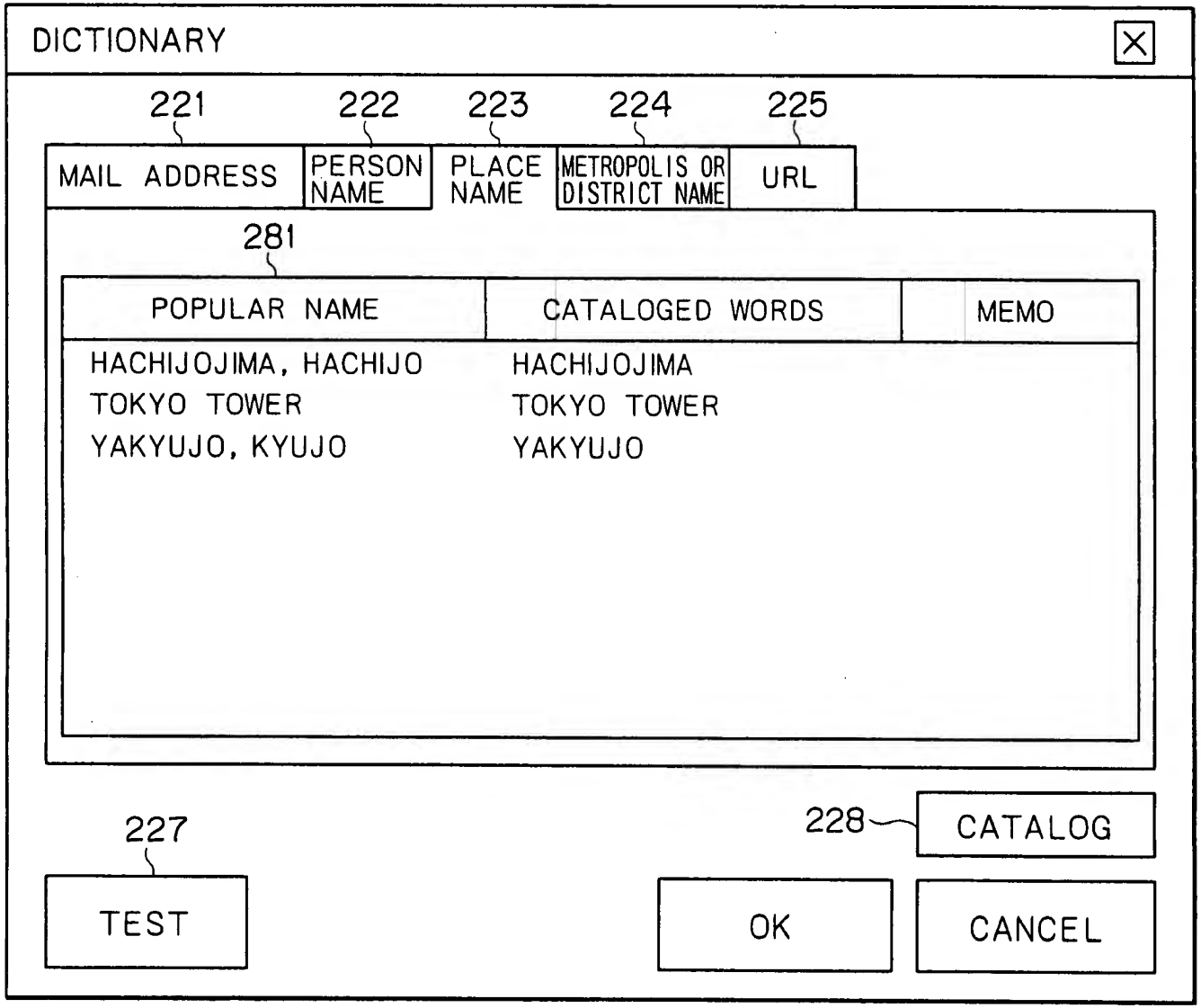

DICTIONARY
221
222
223
224
225
MAIL ADDRESS
PERSON NAME
PLACE NAME
METROPOLIS OR DISTRICT NAME
URL
281
POPULAR NAME
CATALOGED WORDS
MEMO
HACHIJOJIMA, HACHIJO
HACHIJOJIMA
TOKYO TOWER
TOKYO TOWER
YAKYUJO, KYUJO
YAKYUJO
227
TEST
228
CATALOG
OK
CANCEL

FIG. 22

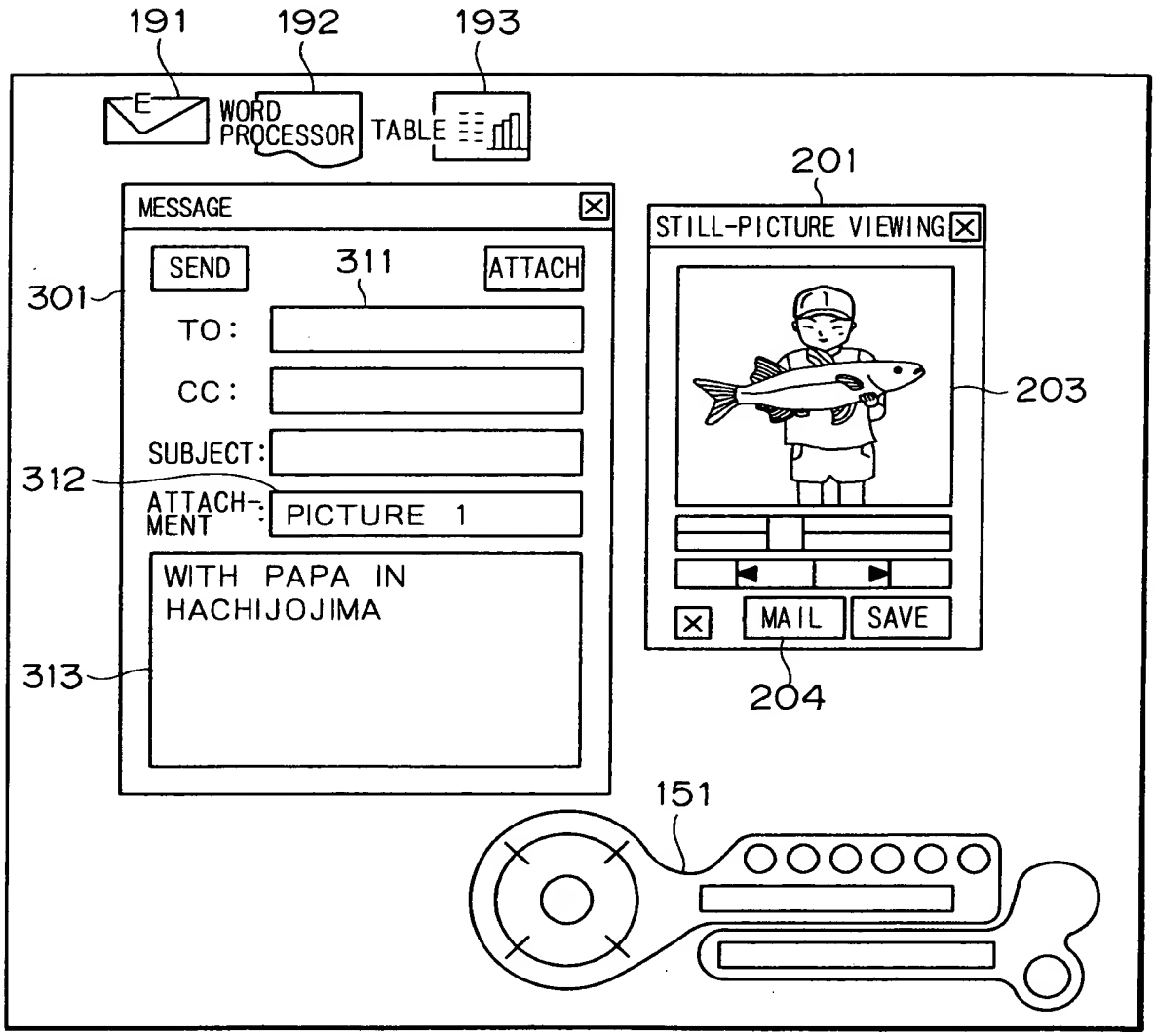

191
192
193
E
WORD PROCESSOR
TABLE
201
MESSAGE
STILL-PICTURE VIEWING
SEND
311
ATTACH
301
TO:
CC:
SUBJECT:
312
ATTACH-MENT:
PICTURE 1
WITH PAPA IN HACHIJOJIMA
313
203
MAIL
SAVE
204
151

FIG.23

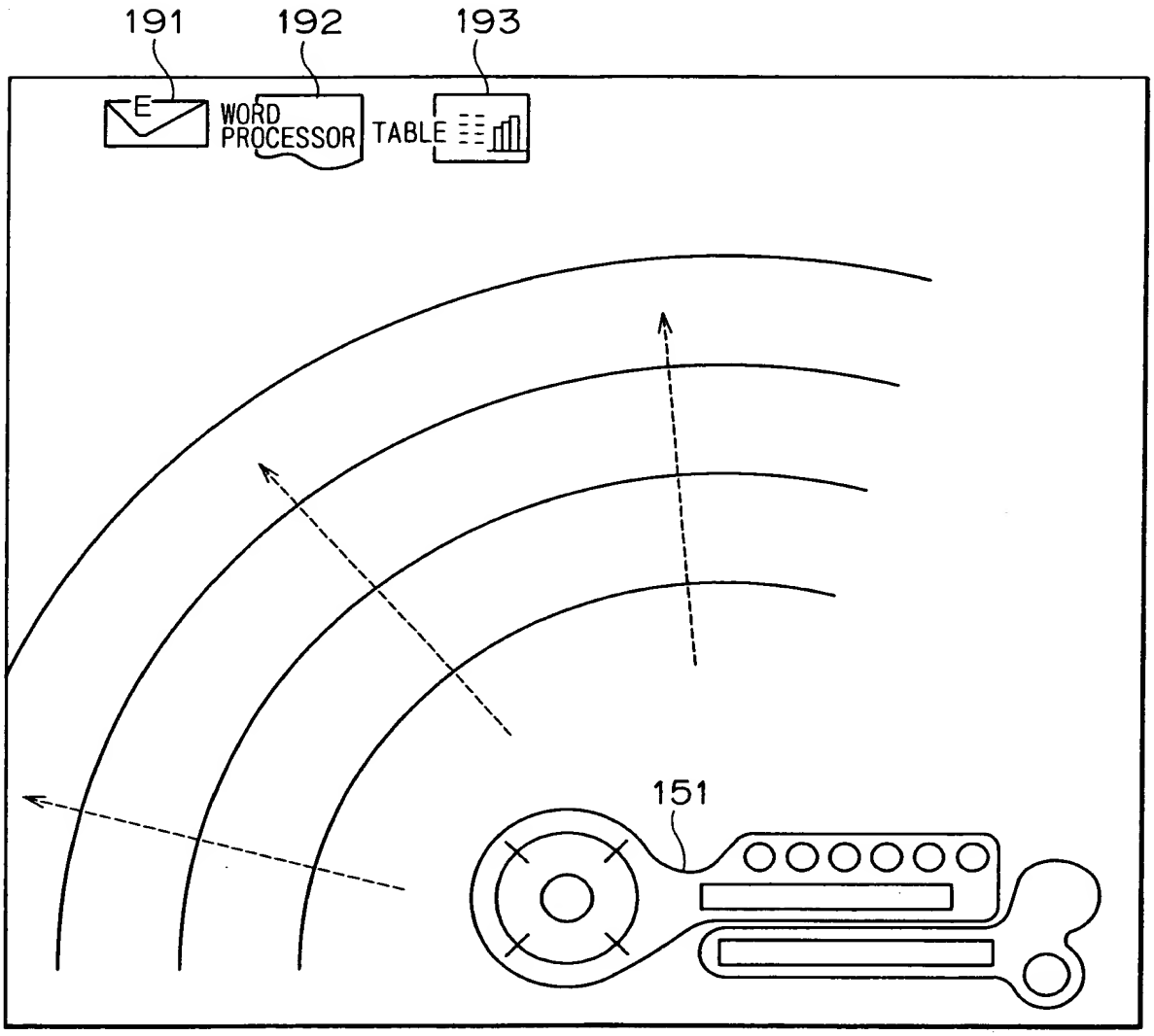


FIG.24

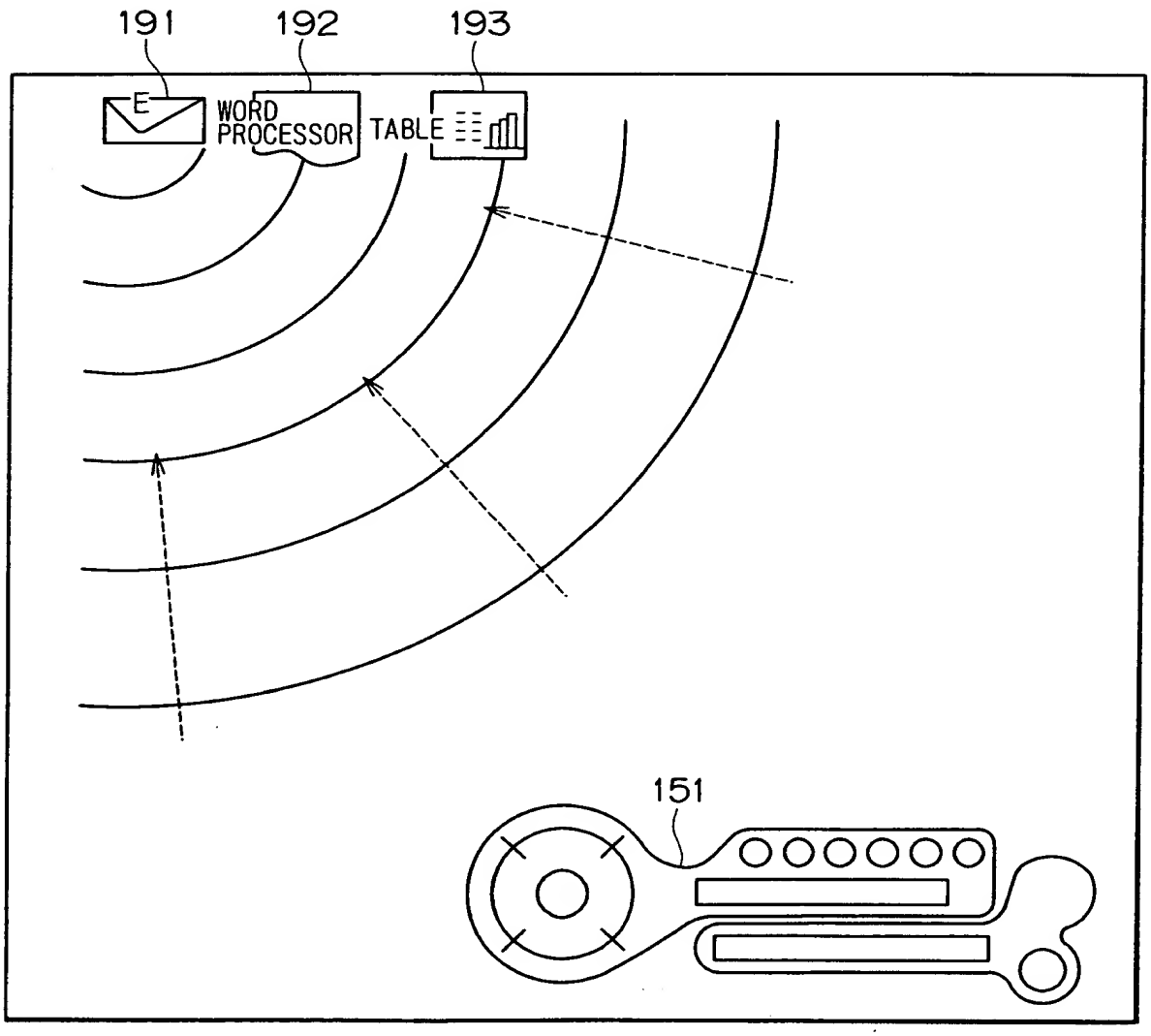


FIG.25

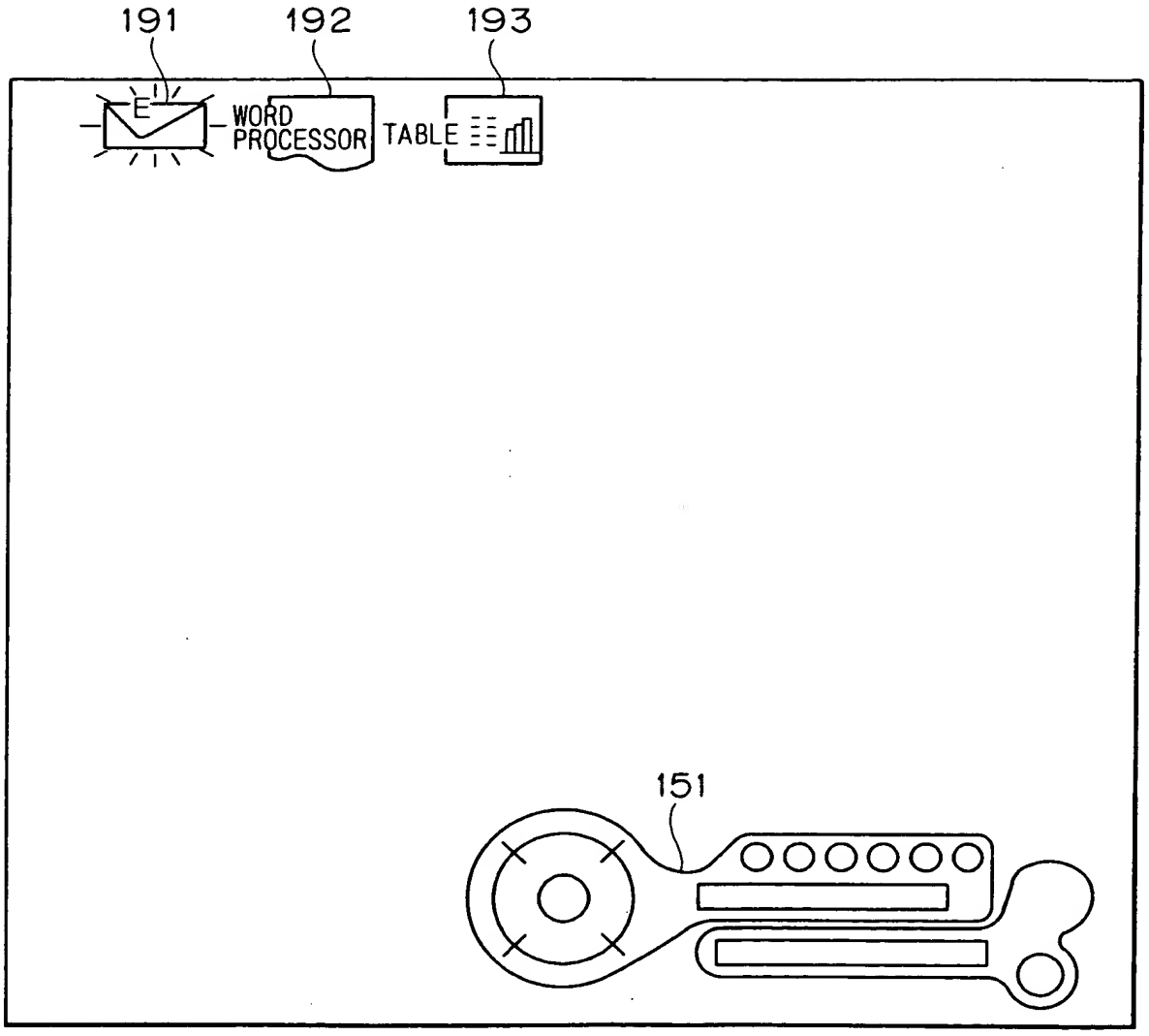


FIG. 26

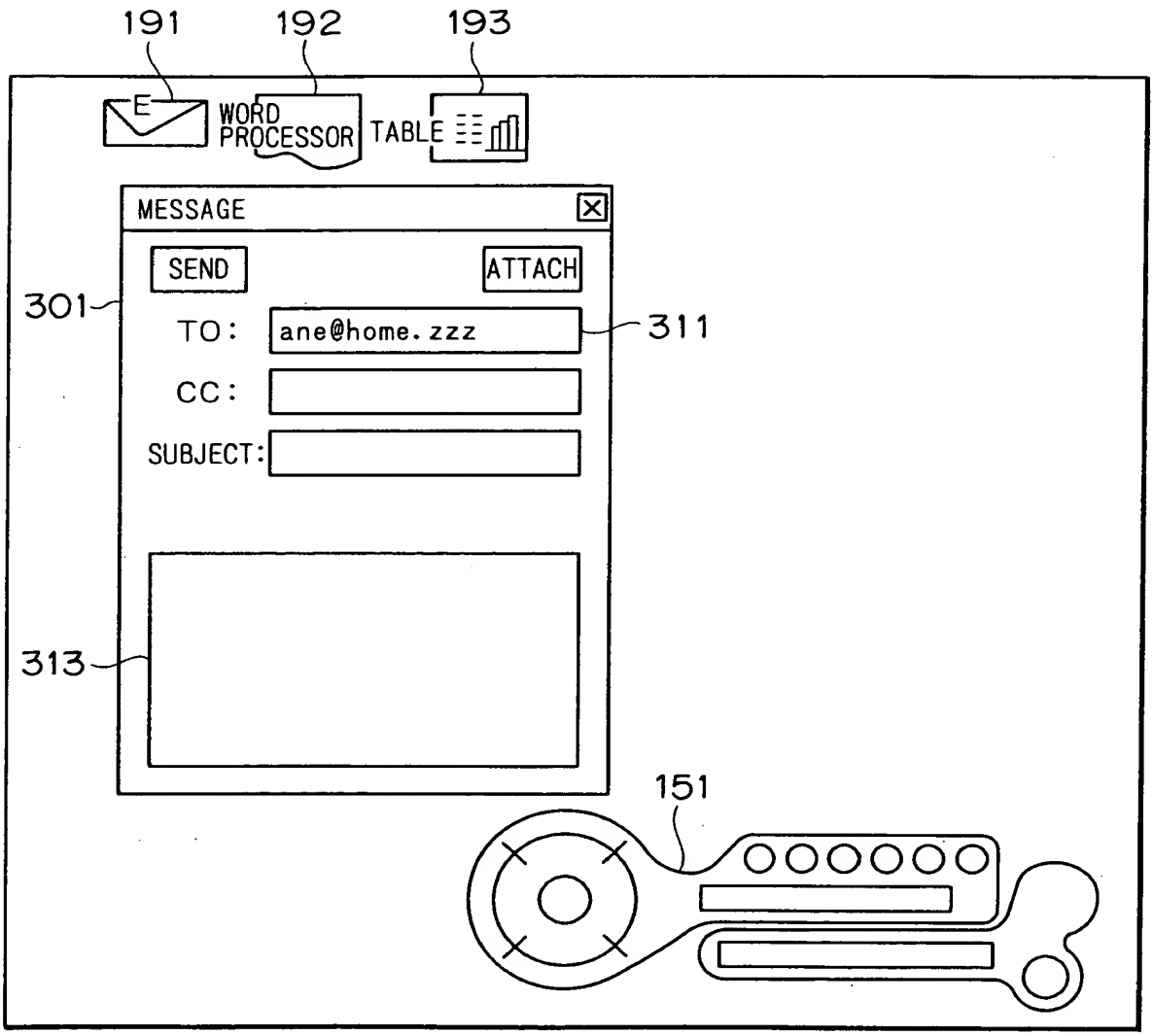

191
192
193
E
WORD PROCESSOR
TABLE
MESSAGE
SEND
ATTACH
301
TO:
ane@home.zzz
311
CC:
SUBJECT:
313
151

FIG.27

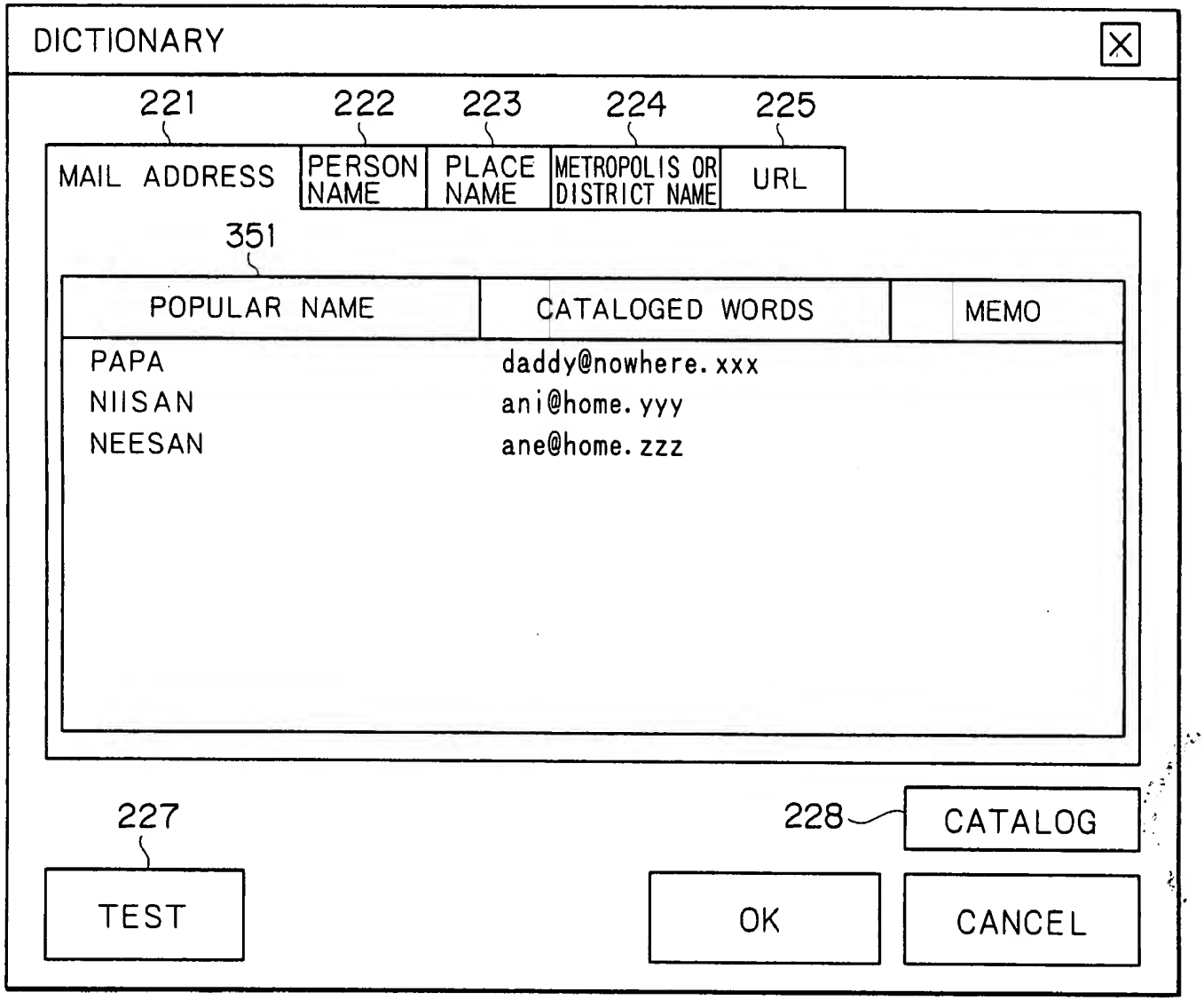

DICTIONARY
221
222
223
224
225
MAIL ADDRESS
PERSON NAME
PLACE NAME
METROPOLIS OR DISTRICT NAME
URL
351
POPULAR NAME
CATALOGED WORDS
MEMO
PAPA
daddy@nowhere.xxx
NIISAN
ani@home.yyy
NEESAN
ane@home.zzz
227
TEST
228
CATALOG
OK
CANCEL

FIG. 28

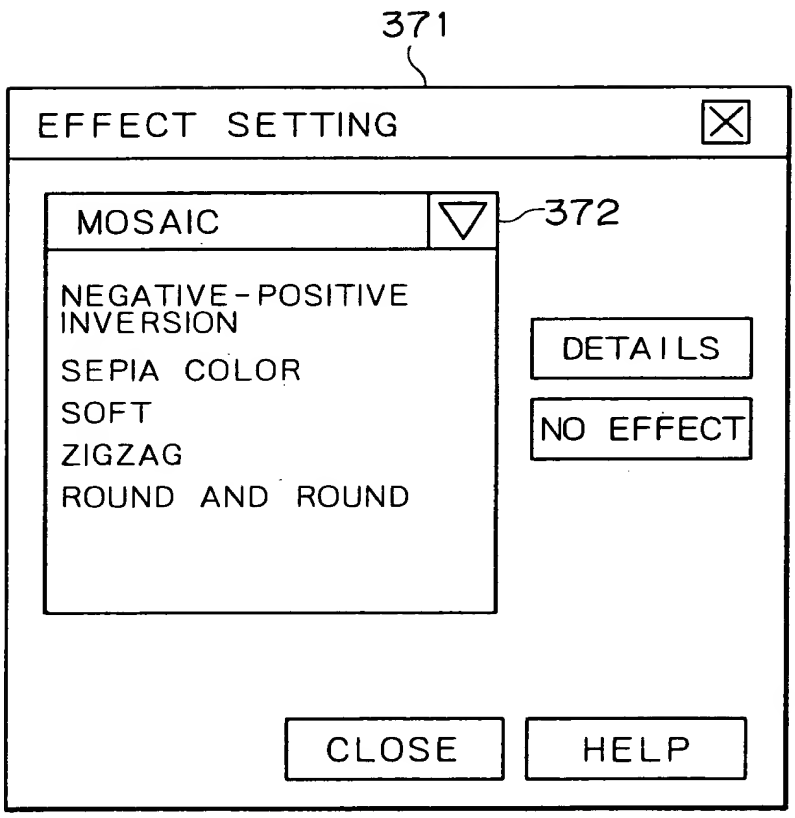

371
EFFECT SETTING
MOSAIC
372
NEGATIVE-POSITIVE INVERSION
SEPIA COLOR
SOFT
ZIGZAG
ROUND AND ROUND
DETAILS
NO EFFECT
CLOSE
HELP

FIG.29

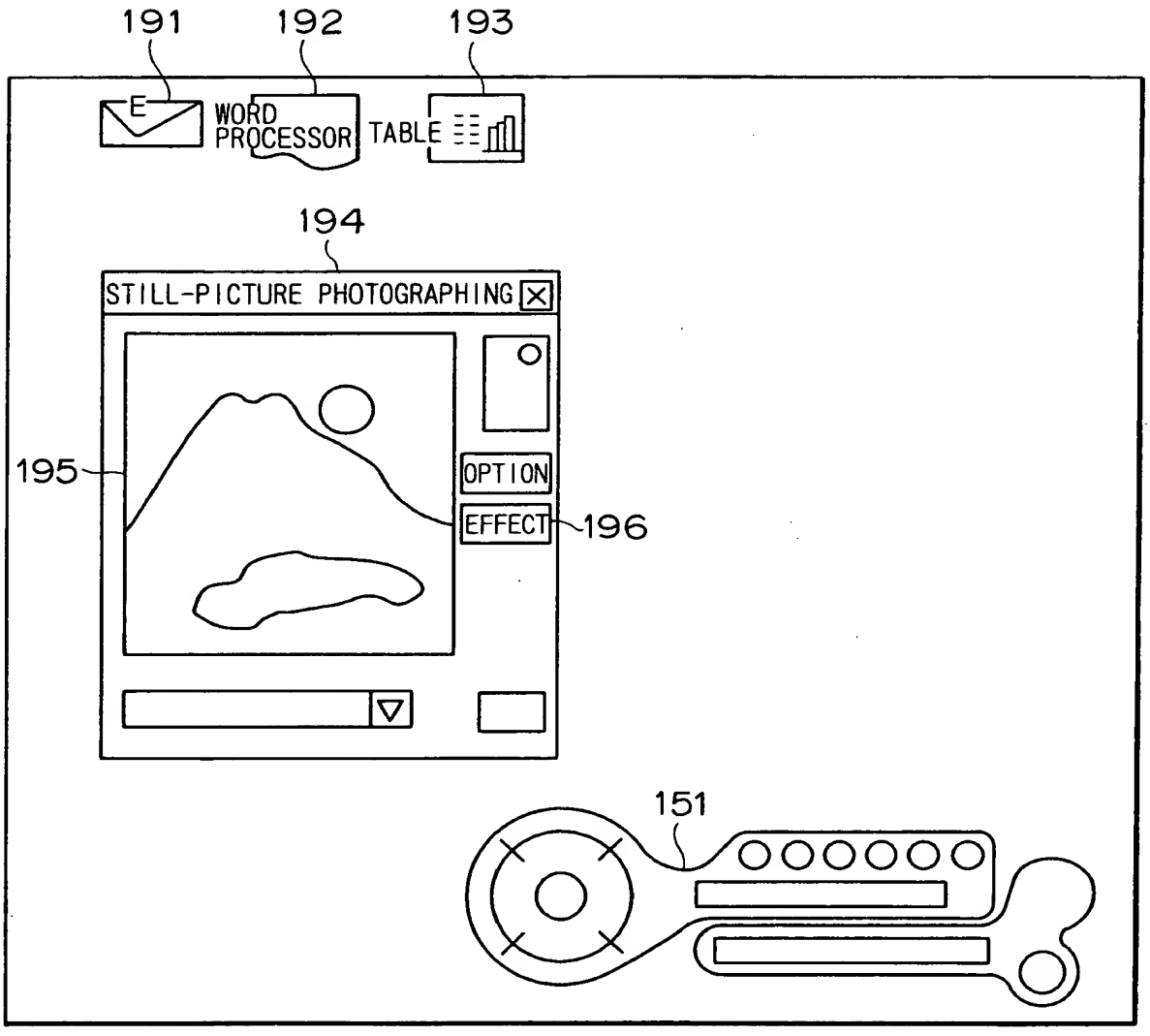

191
192
193
E
WORD PROCESSOR
TABLE
194
STILL-PICTURE PHOTOGRAPHING
195
OPTION
EFFECT
196
151

FIG. 30

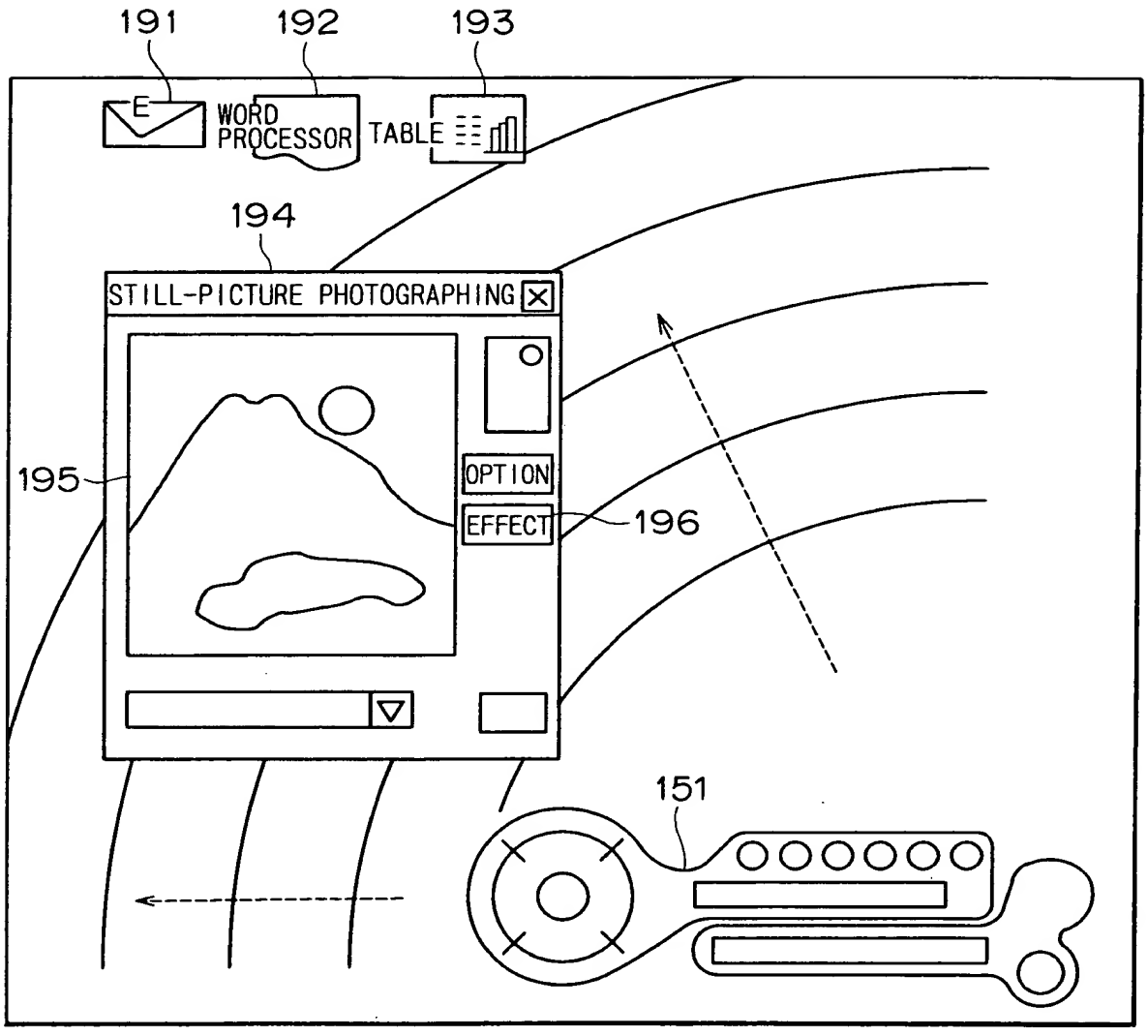

191
192
193
E
WORD PROCESSOR
TABLE
194
STILL-PICTURE PHOTOGRAPHING
195
OPTION
EFFECT
196
151

FIG. 31

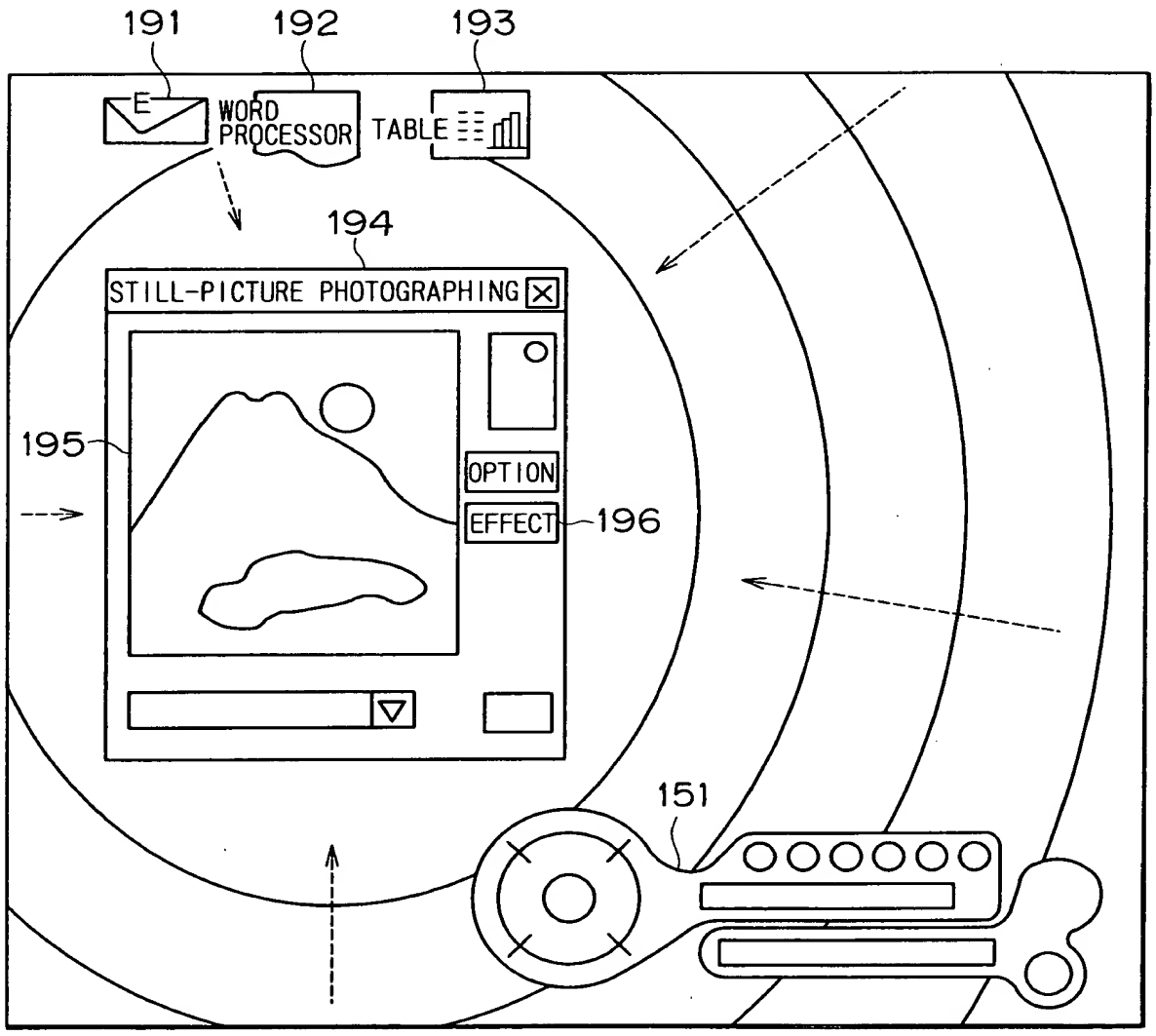

191
192
193
E
WORD PROCESSOR
TABLE
194
STILL-PICTURE PHOTOGRAPHING
195
OPTION
EFFECT
196
151

FIG. 32

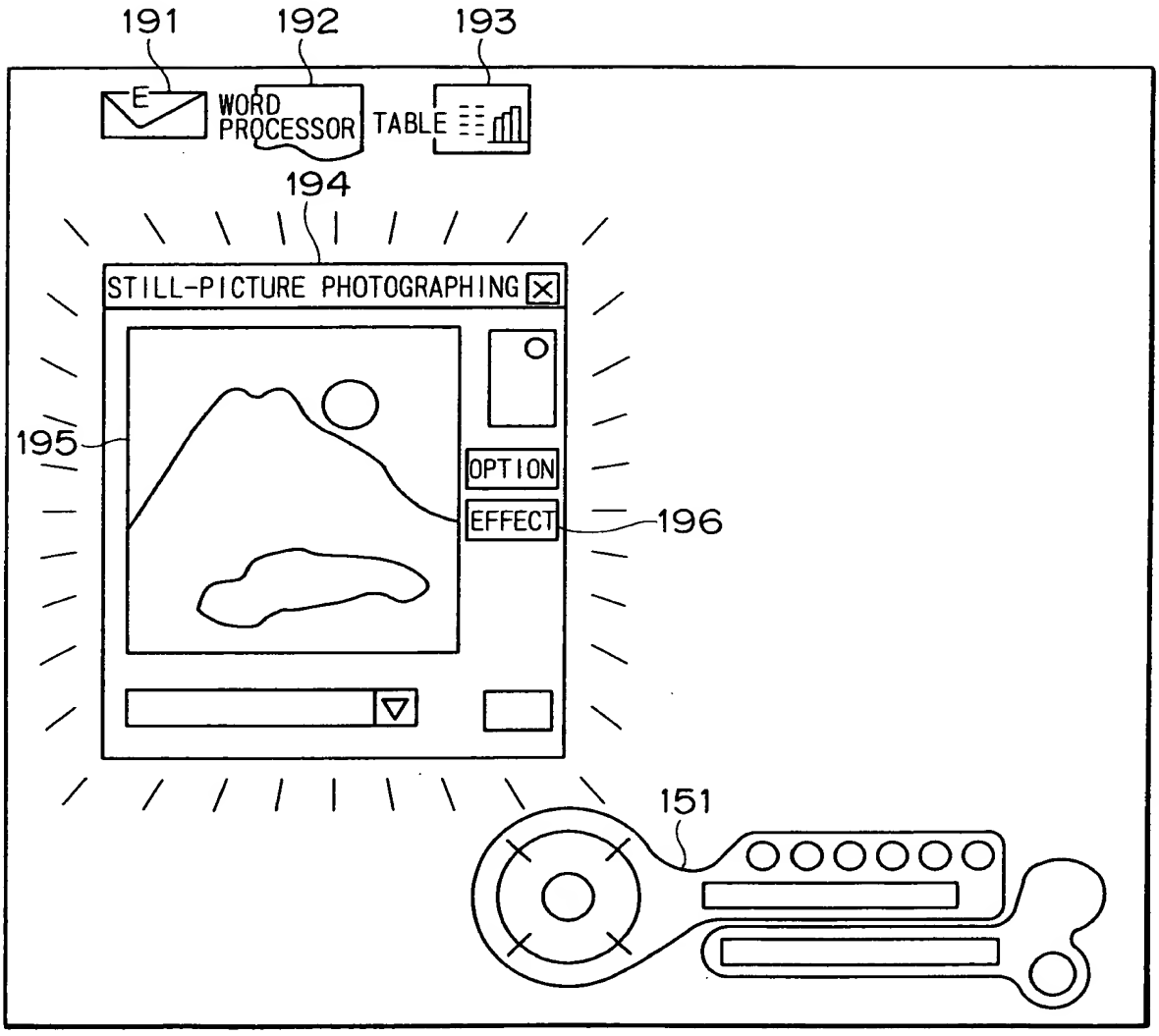

191
192
193
E
WORD PROCESSOR
TABLE
194
STILL-PICTURE PHOTOGRAPHING
195
OPTION
EFFECT
196
151

FIG. 33

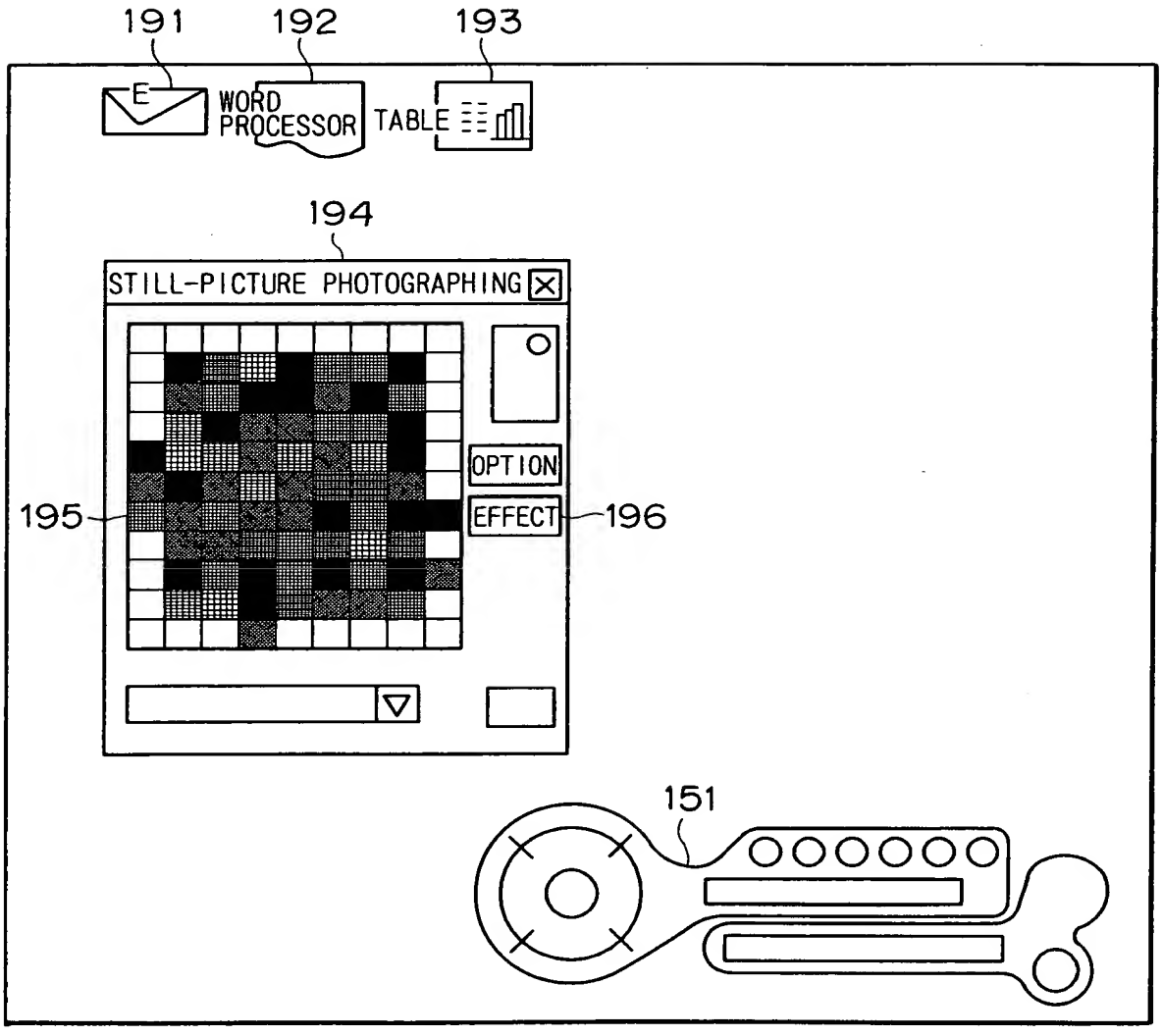

191
192
193
E
WORD PROCESSOR
TABLE
194
STILL-PICTURE PHOTOGRAPHING
OPTION
EFFECT
195
196
151

FIG. 34

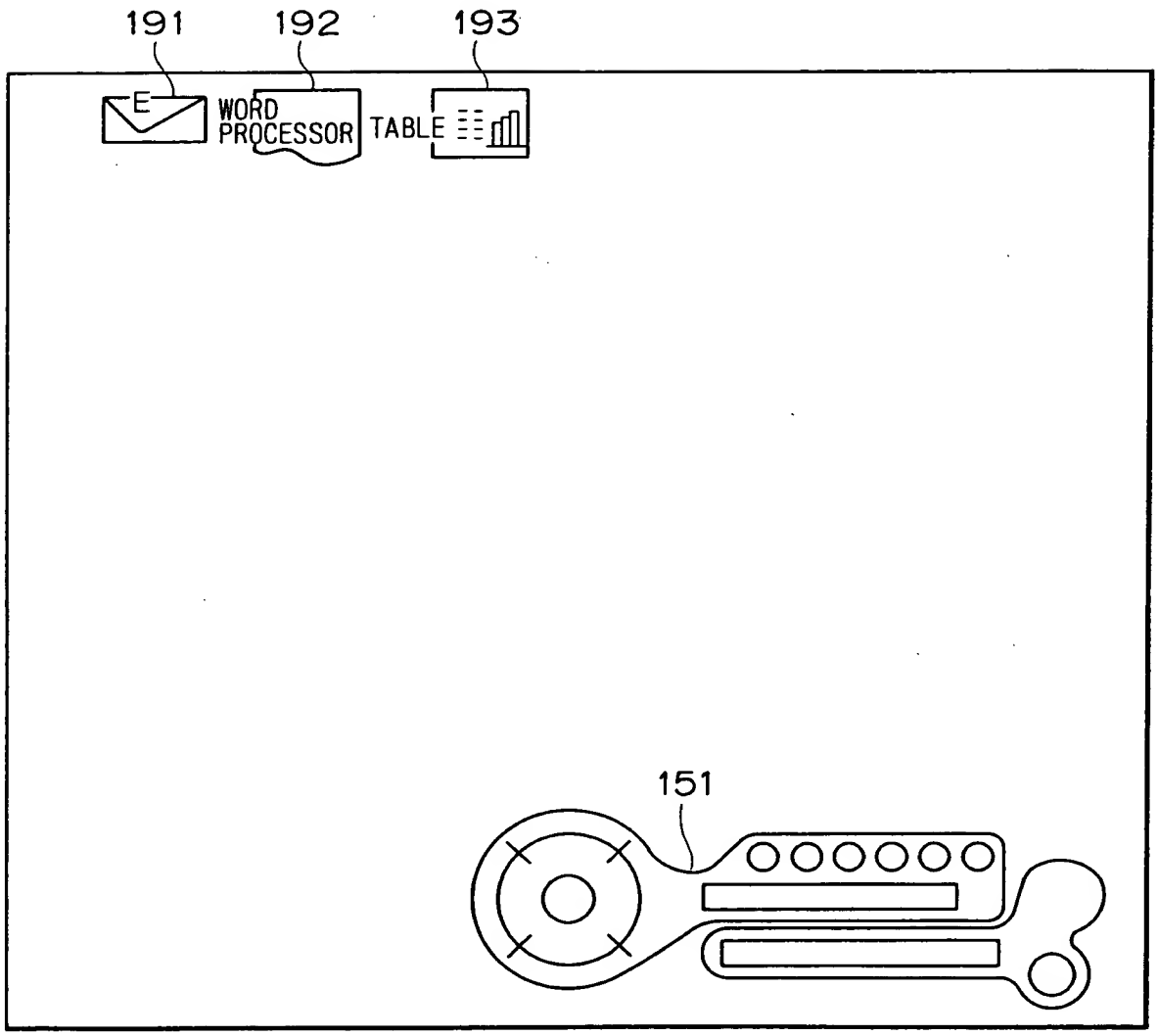


FIG. 35

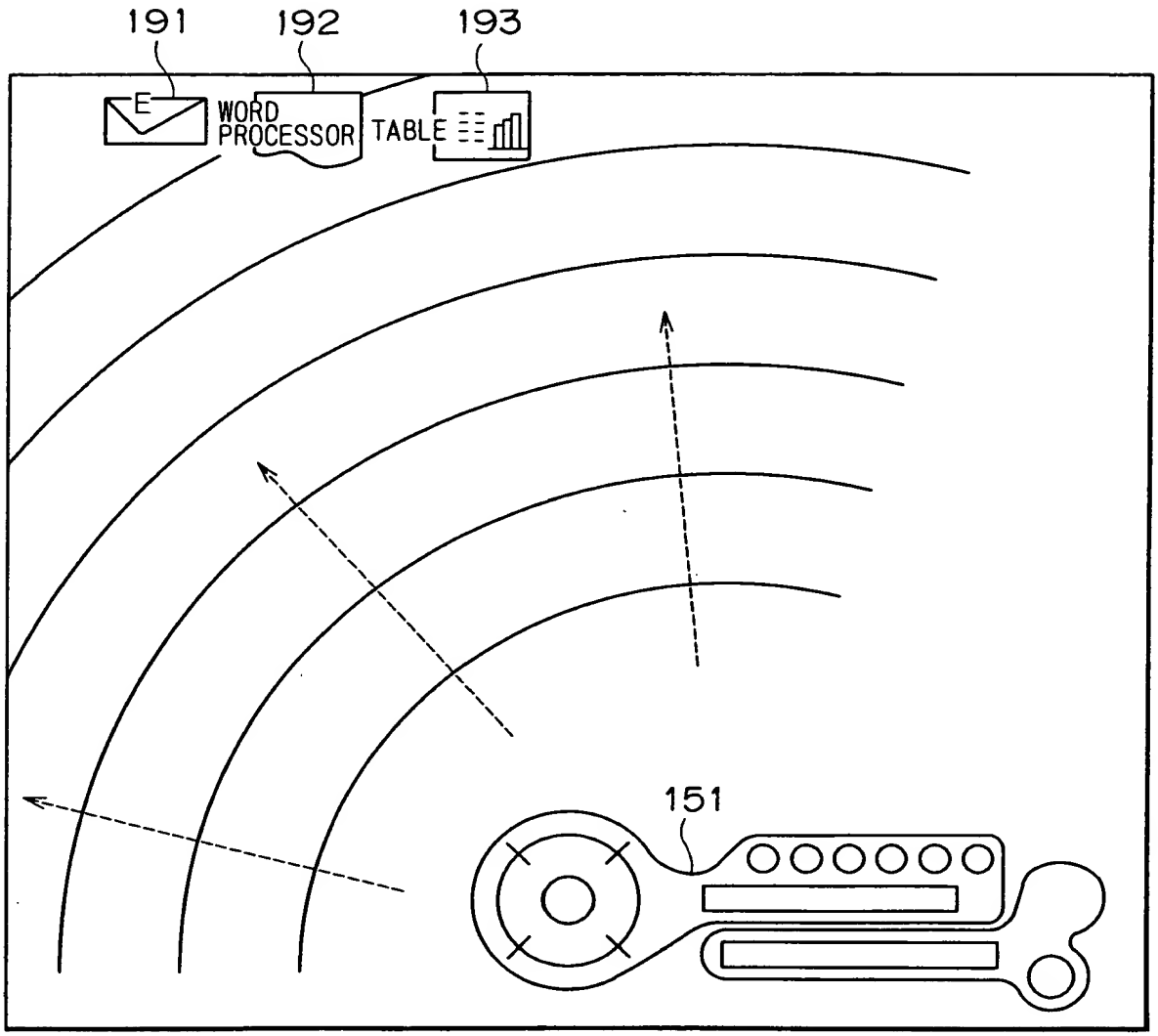


FIG. 36

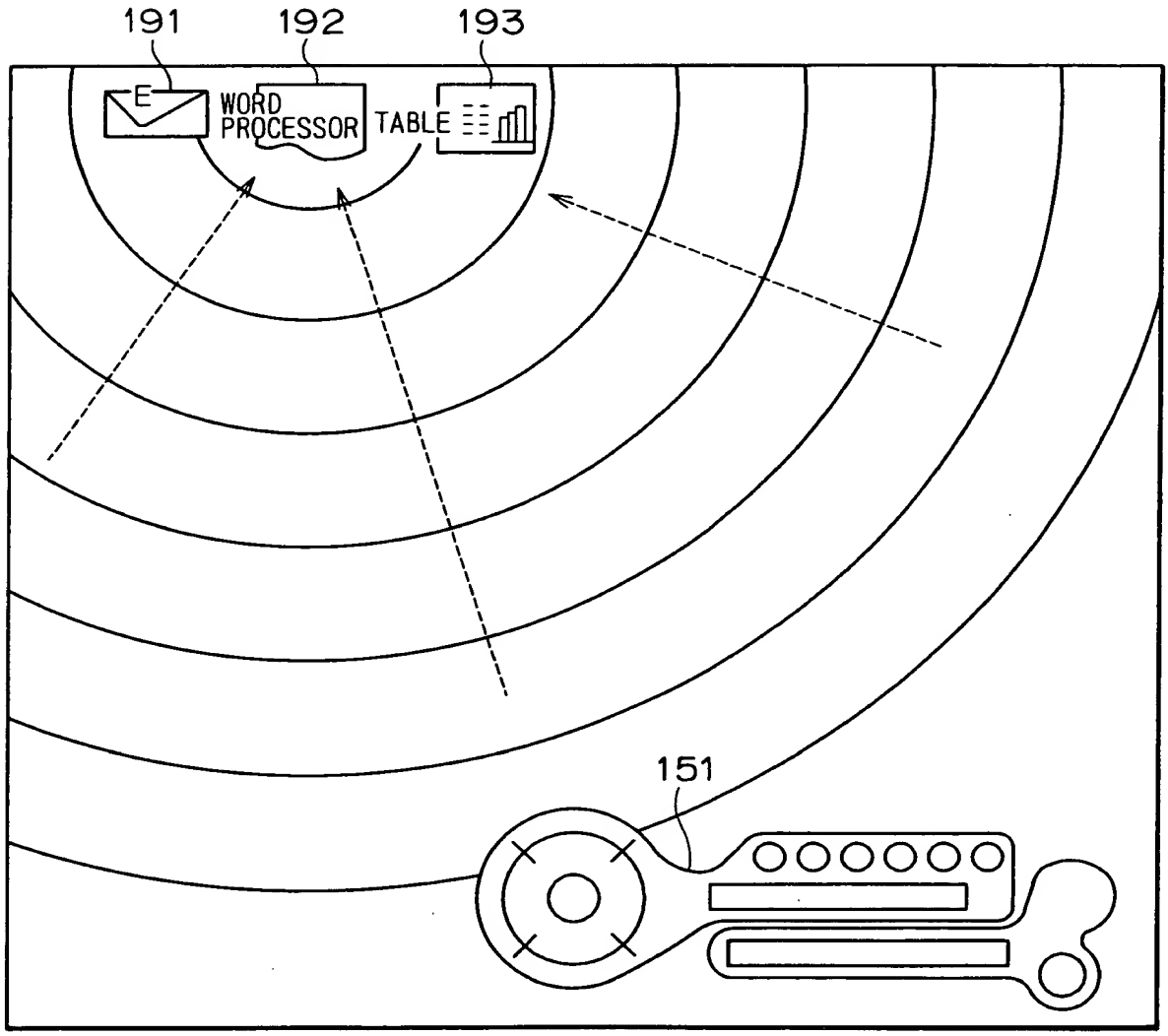


FIG. 37

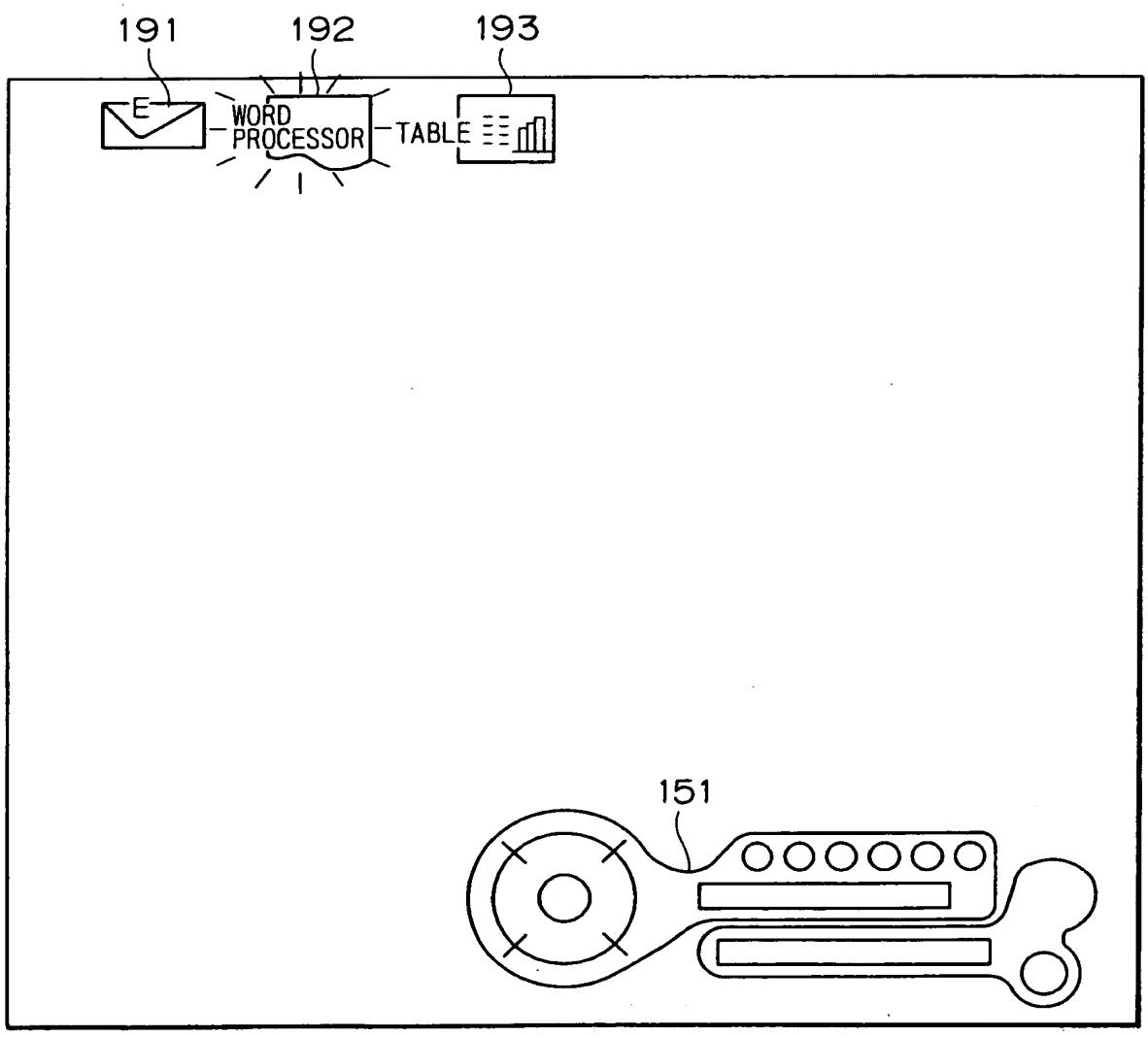


FIG. 38

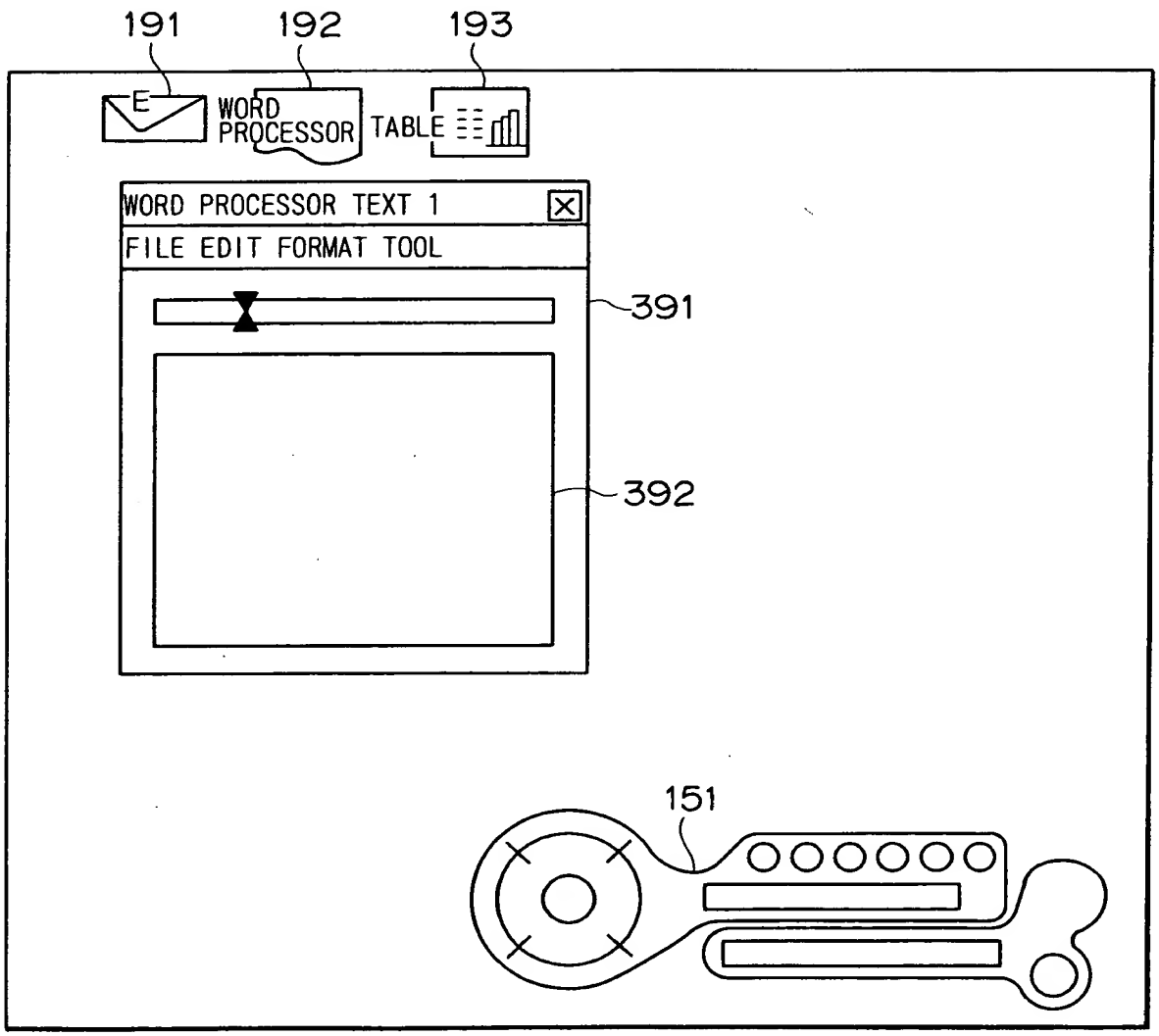

191
192
193
E
WORD PROCESSOR
TABLE
WORD PROCESSOR TEXT 1
FILE EDIT FORMAT TOOL
391
392
151

FIG. 39

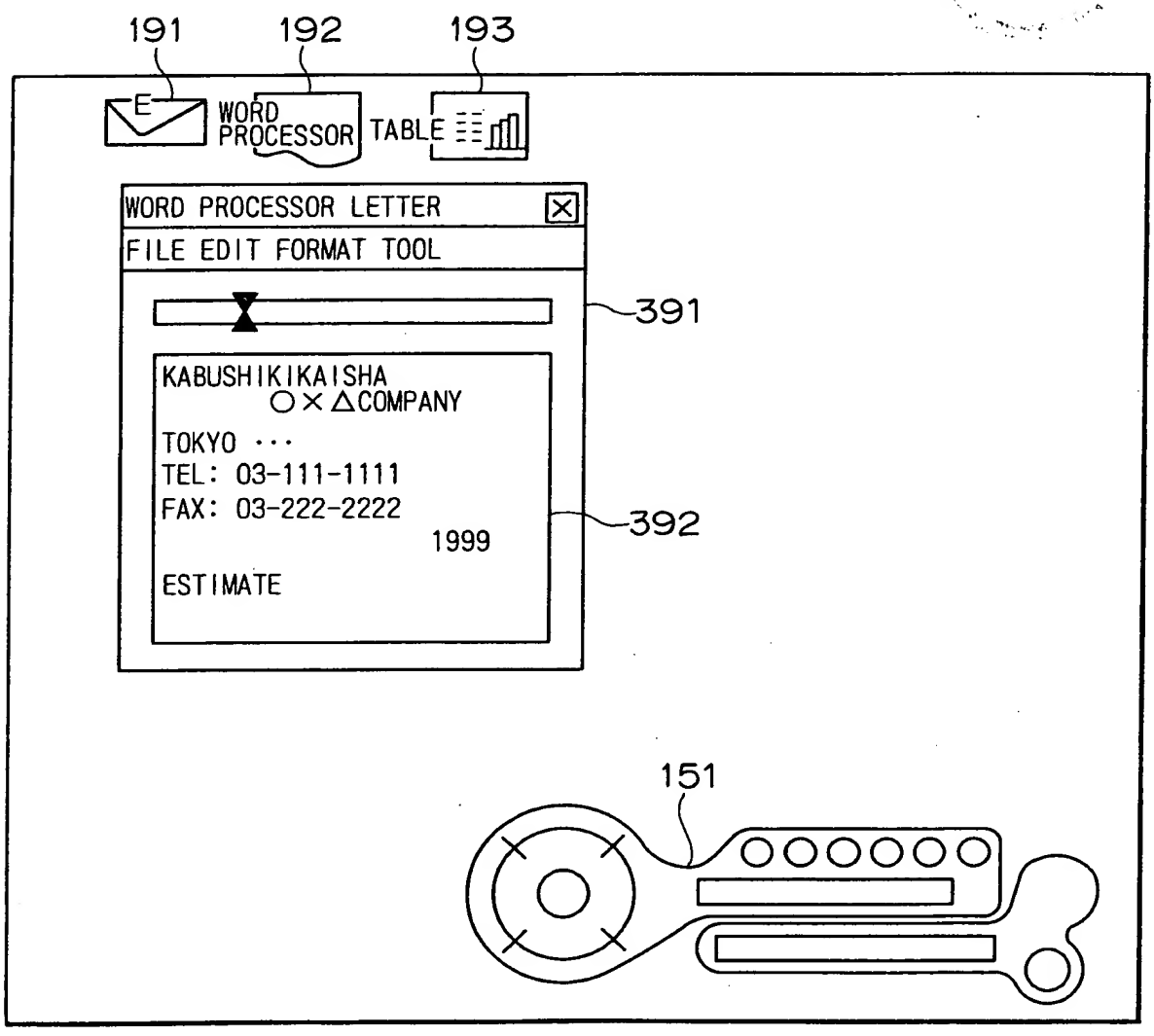

191
192
193
E
WORD PROCESSOR
TABLE
WORD PROCESSOR LETTER
FILE EDIT FORMAT TOOL
391
KABUSHIKIKAISHA
○×△COMPANY
TOKYO ・・・
TEL: 03-111-1111
FAX: 03-222-2222
1999
ESTIMATE
392
151

FIG.40

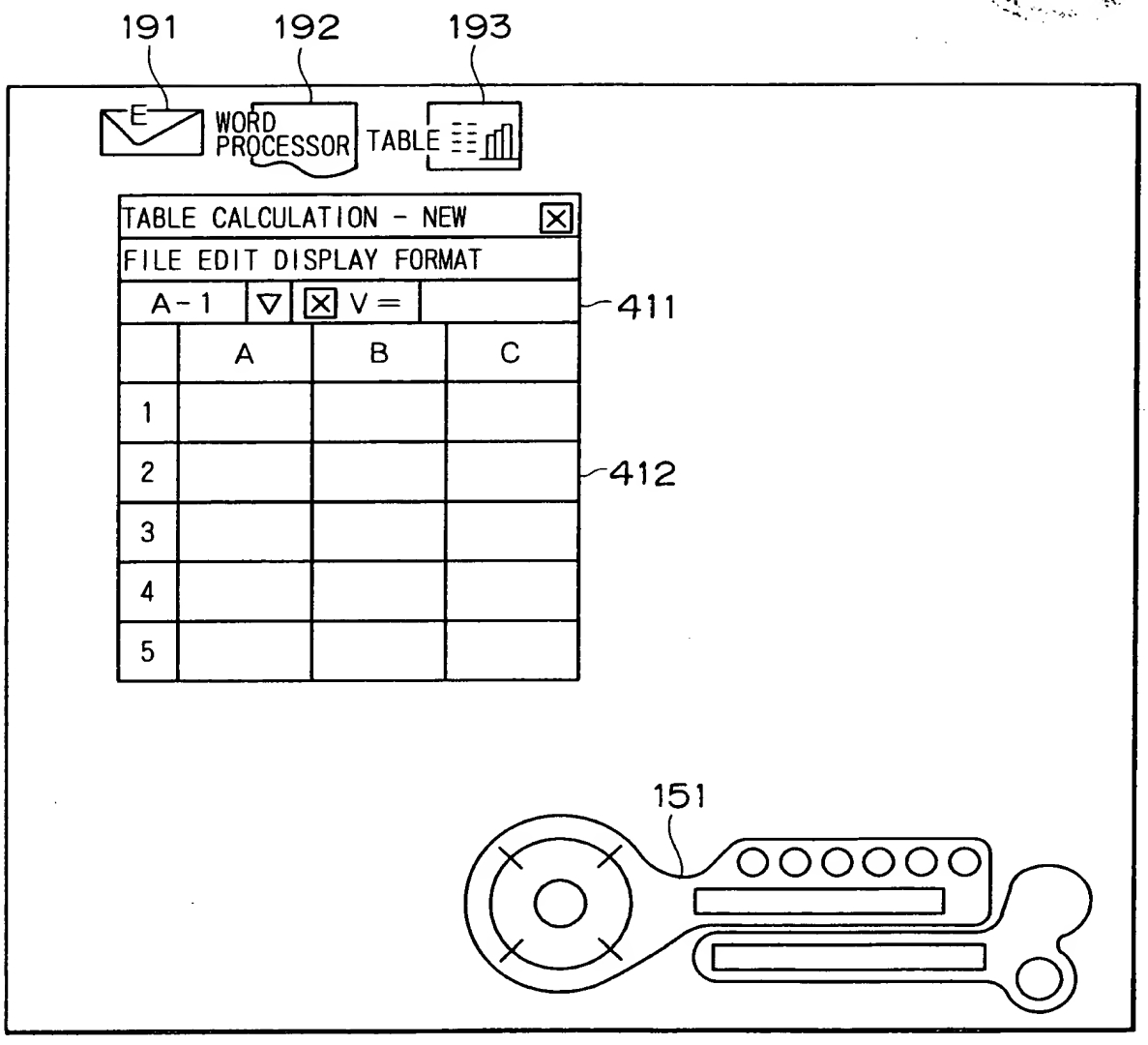
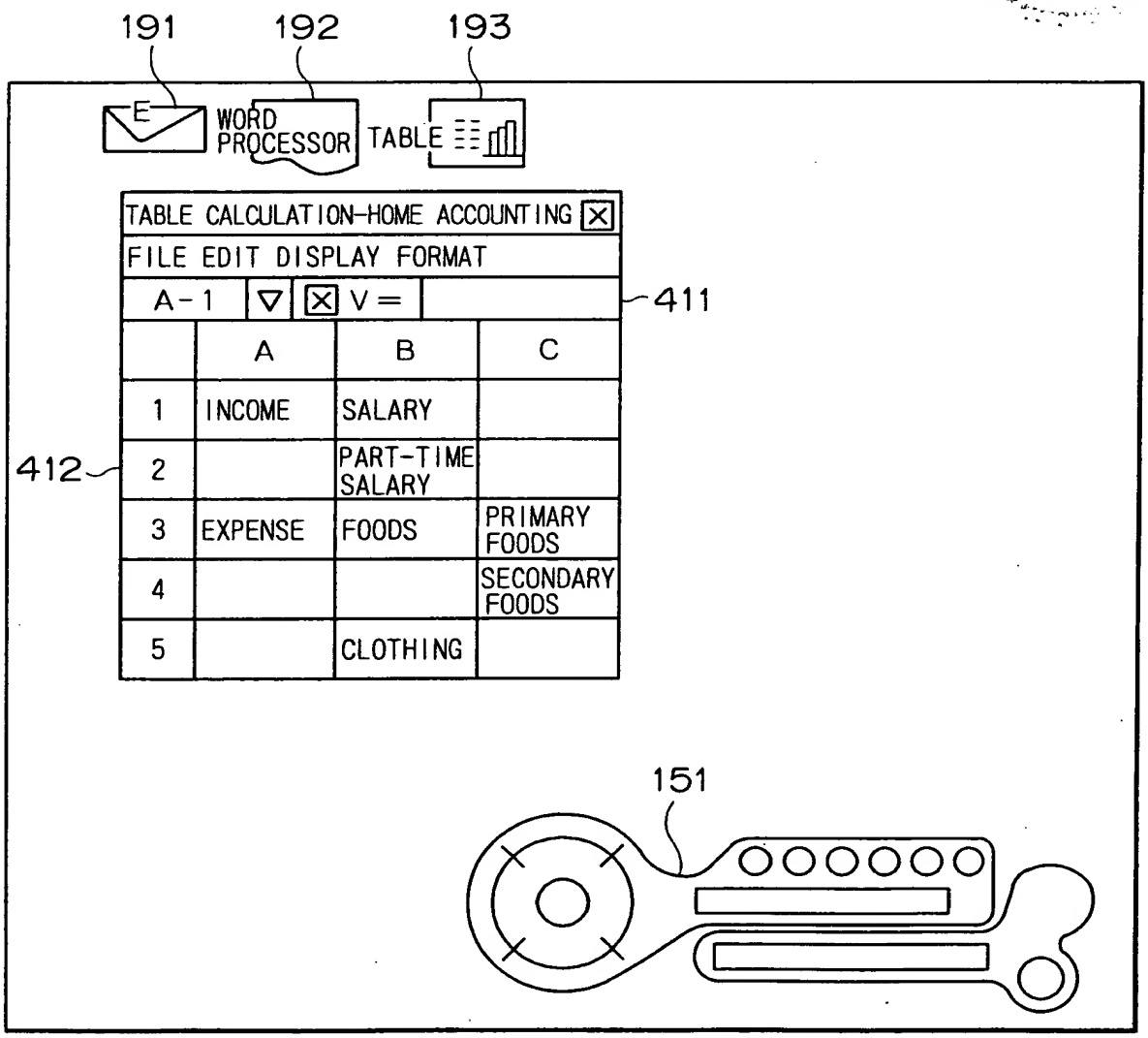

191
192
193
E
WORD PROCESSOR
TABLE
TABLE CALCULATION - NEW
FILE EDIT DISPLAY FORMAT
A-1
V=
411
A
B
C
1
2
3
4
5
412
151

FIG.41



	A	B	C
1	INCOME	SALARY	
2		PART-TIME SALARY	
3	EXPENSE	FOODS	PRIMARY FOODS
4			SECONDARY FOODS
5		CLOTHING	

FIG.42

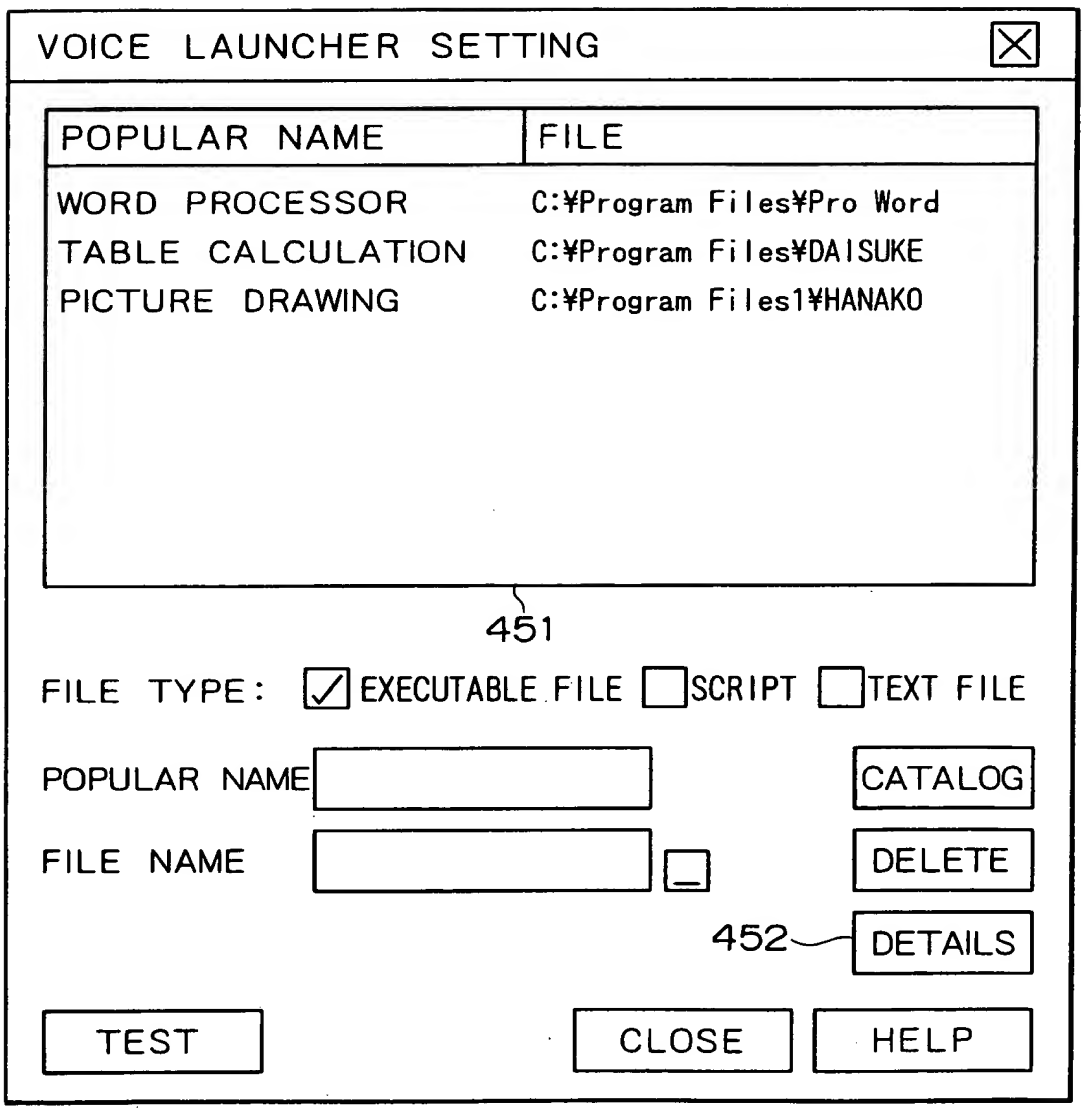

VOICE LAUNCHER SETTING
POPULAR NAME
FILE
WORD PROCESSOR
C:¥Program Files¥Pro Word
TABLE CALCULATION
C:¥Program Files¥DAISUKE
PICTURE DRAWING
C:¥Program Files1¥HANAKO
451
FILE TYPE:
EXECUTABLE FILE
SCRIPT
TEXT FILE
POPULAR NAME
CATALOG
FILE NAME
DELETE
452
DETAILS
TEST
CLOSE
HELP

FIG. 43

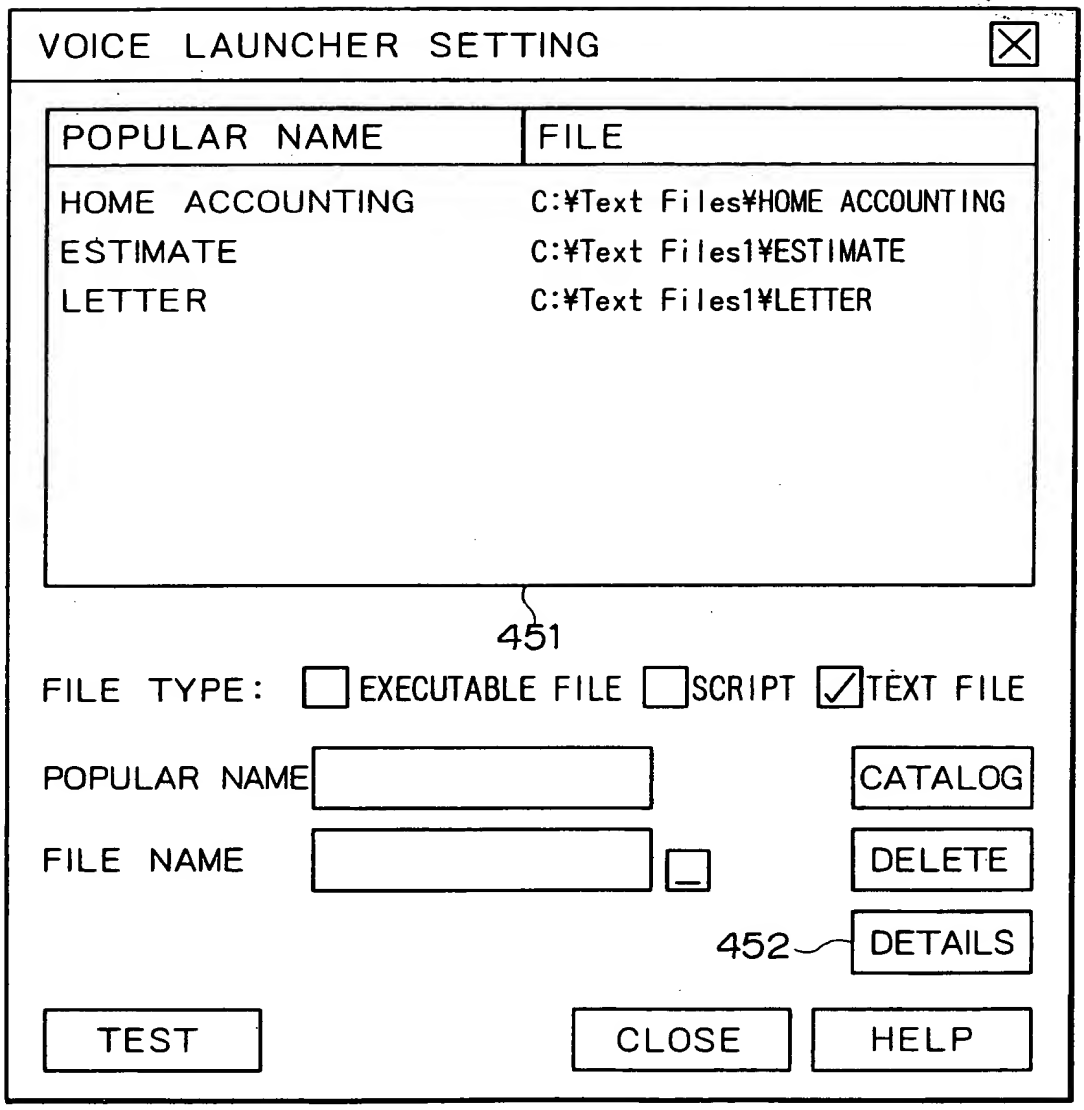

VOICE LAUNCHER SETTING
POPULAR NAME
FILE
HOME ACCOUNTING
C:¥Text Files¥HOME ACCOUNTING
ESTIMATE
C:¥Text Files1¥ESTIMATE
LETTER
C:¥Text Files1¥LETTER
451
FILE TYPE:
EXECUTABLE FILE
SCRIPT
TEXT FILE
POPULAR NAME
CATALOG
FILE NAME
DELETE
452
DETAILS
TEST
CLOSE
HELP

FIG.44

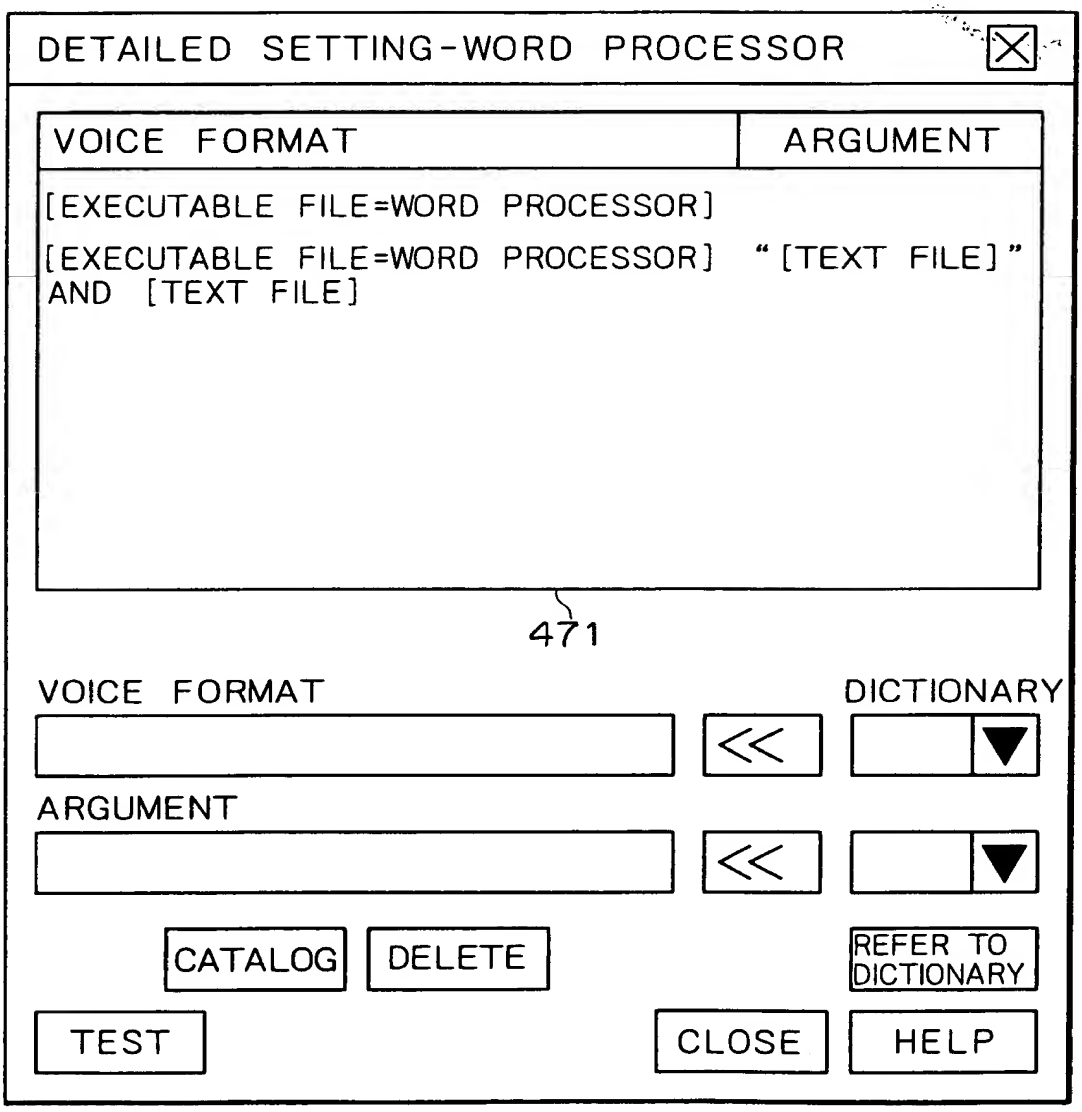

DETAILED SETTING-WORD PROCESSOR
VOICE FORMAT
ARGUMENT
[EXECUTABLE FILE=WORD PROCESSOR]
[EXECUTABLE FILE=WORD PROCESSOR] "[TEXT FILE]" AND [TEXT FILE]
471
VOICE FORMAT
DICTIONARY
ARGUMENT
CATALOG
DELETE
REFER TO DICTIONARY
TEST
CLOSE
HELP

FIG. 45

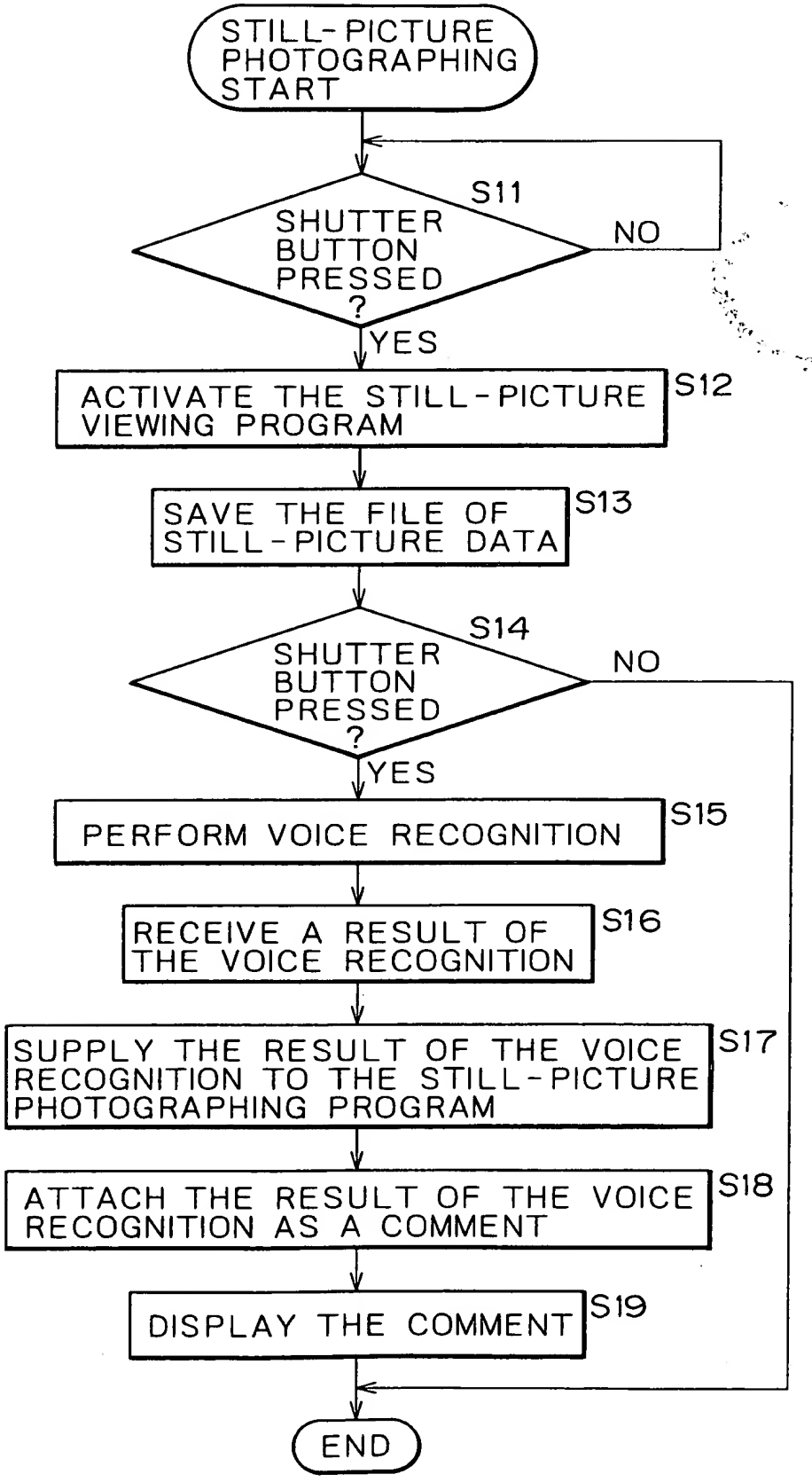

STILL-PICTURE PHOTOGRAPHING START
S11
SHUTTER BUTTON PRESSED ?
NO
YES
ACTIVATE THE STILL-PICTURE VIEWING PROGRAM
S12
SAVE THE FILE OF STILL-PICTURE DATA
S13
S14
SHUTTER BUTTON PRESSED ?
NO
YES
PERFORM VOICE RECOGNITION
S15
RECEIVE A RESULT OF THE VOICE RECOGNITION
S16
SUPPLY THE RESULT OF THE VOICE RECOGNITION TO THE STILL-PICTURE PHOTOGRAPHING PROGRAM
S17
ATTACH THE RESULT OF THE VOICE RECOGNITION AS A COMMENT
S18
DISPLAY THE COMMENT
S19
END

FIG. 46

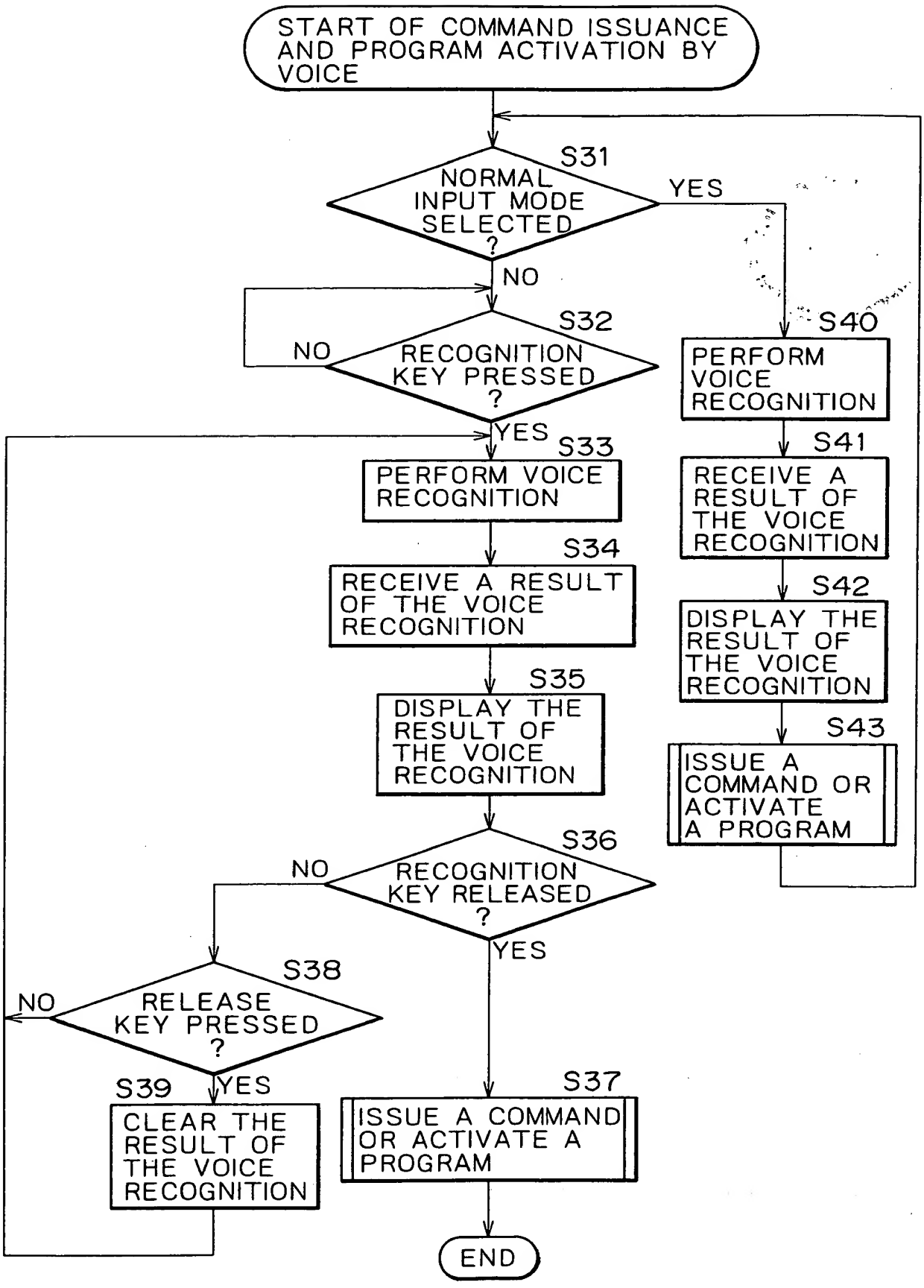

START OF COMMAND ISSUANCE AND PROGRAM ACTIVATION BY VOICE
S31
NORMAL INPUT MODE SELECTED ?
YES
NO
S32
NO
RECOGNITION KEY PRESSED ?
YES
S33
PERFORM VOICE RECOGNITION
S34
RECEIVE A RESULT OF THE VOICE RECOGNITION
S35
DISPLAY THE RESULT OF THE VOICE RECOGNITION
S36
NO
RECOGNITION KEY RELEASED ?
YES
S38
NO
RELEASE KEY PRESSED ?
S39
YES
CLEAR THE RESULT OF THE VOICE RECOGNITION
S37
ISSUE A COMMAND OR ACTIVATE A PROGRAM
END
S40
PERFORM VOICE RECOGNITION
S41
RECEIVE A RESULT OF THE VOICE RECOGNITION
S42
DISPLAY THE RESULT OF THE VOICE RECOGNITION
S43
ISSUE A COMMAND OR ACTIVATE A PROGRAM

FIG.47

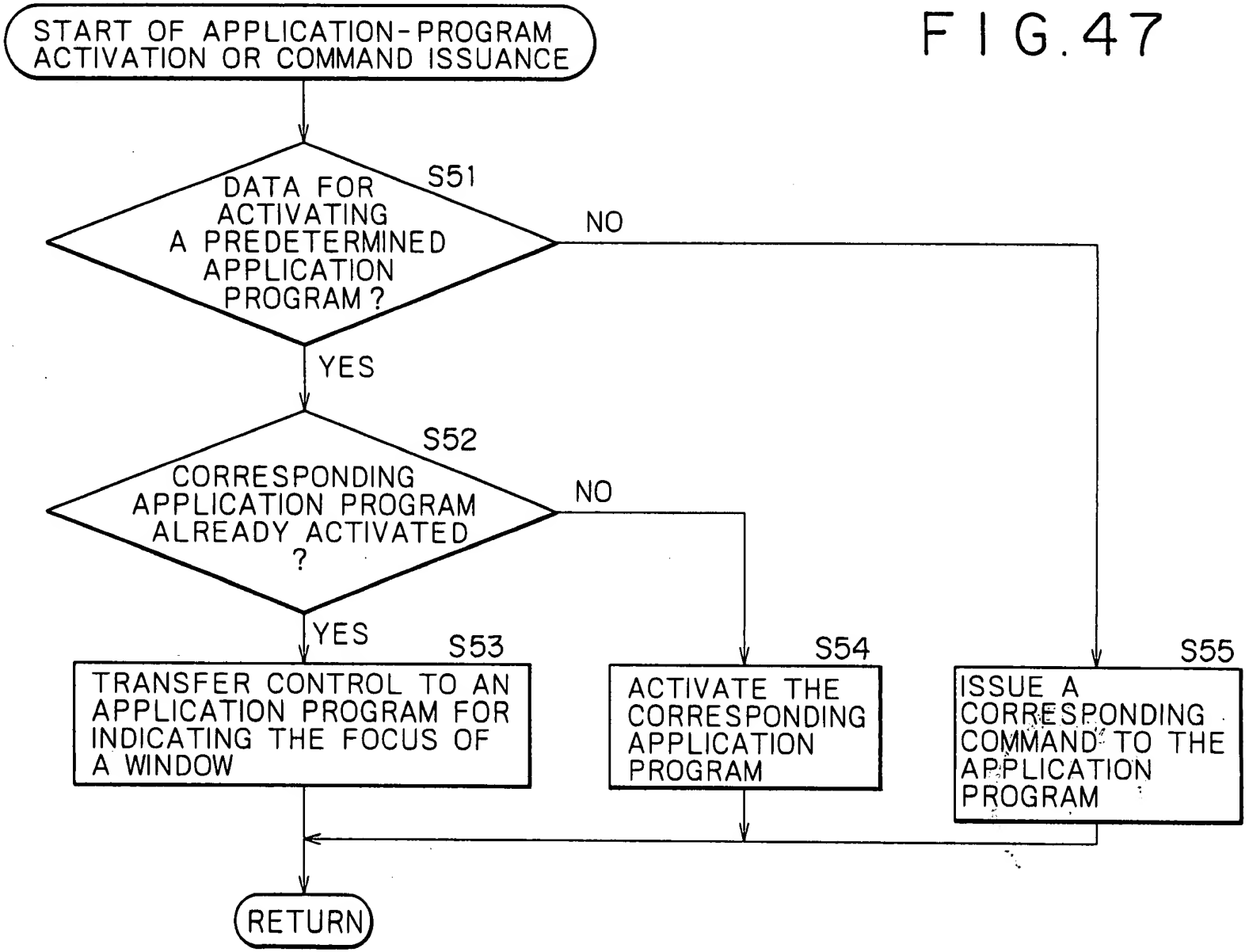

START OF APPLICATION-PROGRAM ACTIVATION OR COMMAND ISSUANCE
S51
DATA FOR ACTIVATING A PREDETERMINED APPLICATION PROGRAM ?
NO
YES
S52
CORRESPONDING APPLICATION PROGRAM ALREADY ACTIVATED ?
NO
YES
S53
TRANSFER CONTROL TO AN APPLICATION PROGRAM FOR INDICATING THE FOCUS OF A WINDOW
S54
ACTIVATE THE CORRESPONDING APPLICATION PROGRAM
S55
ISSUE A CORRESPONDING COMMAND TO THE APPLICATION PROGRAM
RETURN

FIG. 48

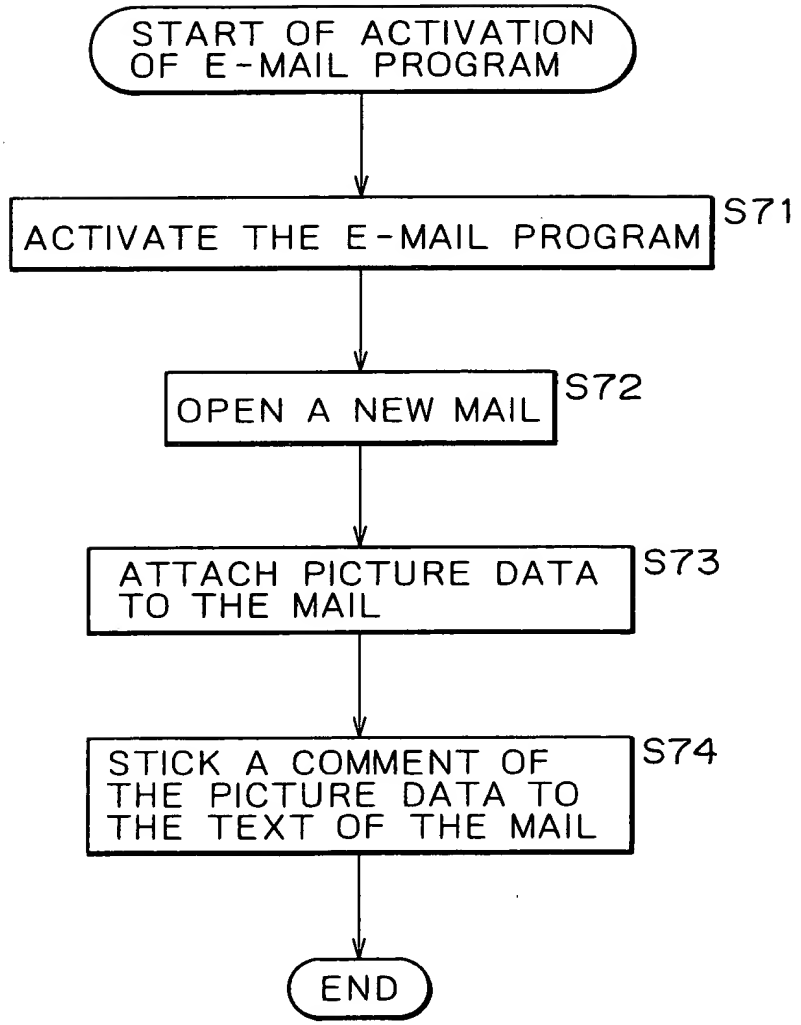

START OF ACTIVATION OF E-MAIL PROGRAM
ACTIVATE THE E-MAIL PROGRAM
S71
OPEN A NEW MAIL
S72
ATTACH PICTURE DATA TO THE MAIL
S73
STICK A COMMENT OF THE PICTURE DATA TO THE TEXT OF THE MAIL
S74
END

FIG. 49

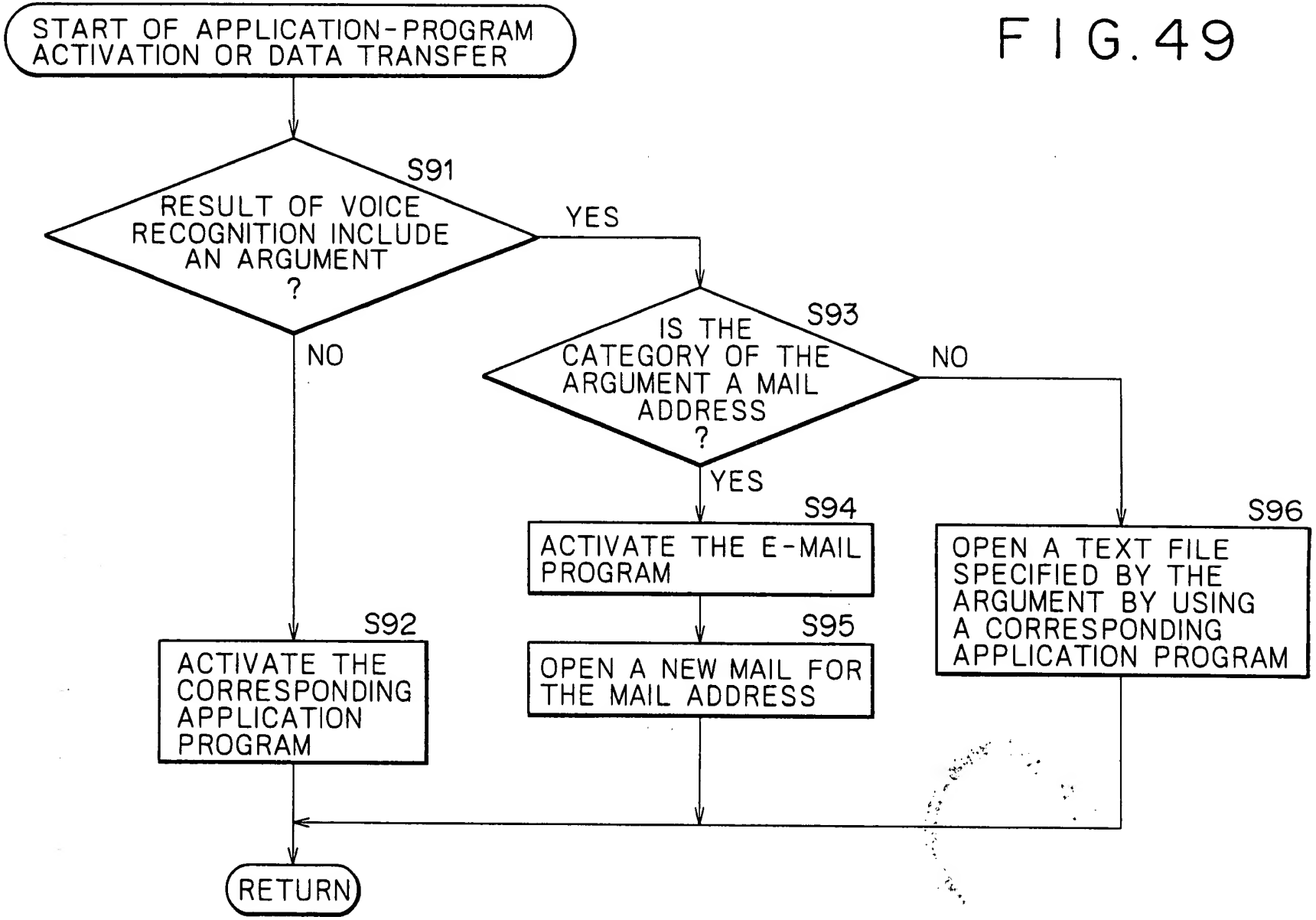

START OF APPLICATION-PROGRAM ACTIVATION OR DATA TRANSFER
S91
RESULT OF VOICE RECOGNITION INCLUDE AN ARGUMENT ?
YES
NO
S93
IS THE CATEGORY OF THE ARGUMENT A MAIL ADDRESS ?
NO
YES
S94
ACTIVATE THE E-MAIL PROGRAM
S96
OPEN A TEXT FILE SPECIFIED BY THE ARGUMENT BY USING A CORRESPONDING APPLICATION PROGRAM
S92
ACTIVATE THE CORRESPONDING APPLICATION PROGRAM
S95
OPEN A NEW MAIL FOR THE MAIL ADDRESS
RETURN

FIG.50

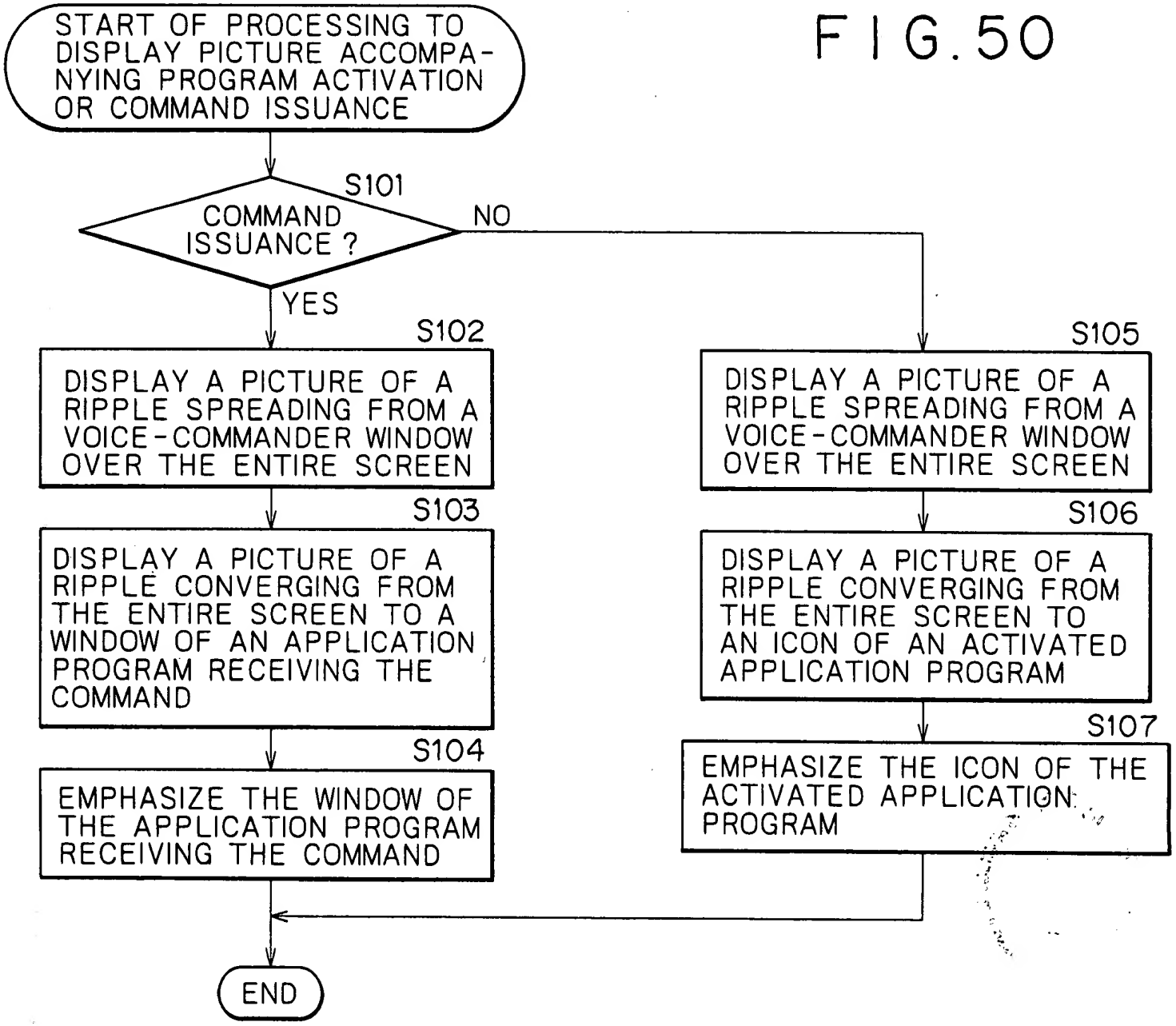

START OF PROCESSING TO DISPLAY PICTURE ACCOMPANYING PROGRAM ACTIVATION OR COMMAND ISSUANCE
S101
COMMAND ISSUANCE ?
NO
YES
S102
DISPLAY A PICTURE OF A RIPPLE SPREADING FROM A VOICE-COMMANDER WINDOW OVER THE ENTIRE SCREEN
S103
DISPLAY A PICTURE OF A RIPPLE CONVERGING FROM THE ENTIRE SCREEN TO A WINDOW OF AN APPLICATION PROGRAM RECEIVING THE COMMAND
S104
EMPHASIZE THE WINDOW OF THE APPLICATION PROGRAM RECEIVING THE COMMAND
S105
DISPLAY A PICTURE OF A RIPPLE SPREADING FROM A VOICE-COMMANDER WINDOW OVER THE ENTIRE SCREEN
S106
DISPLAY A PICTURE OF A RIPPLE CONVERGING FROM THE ENTIRE SCREEN TO AN ICON OF AN ACTIVATED APPLICATION PROGRAM
S107
EMPHASIZE THE ICON OF THE ACTIVATED APPLICATION PROGRAM
END

FIG. 51

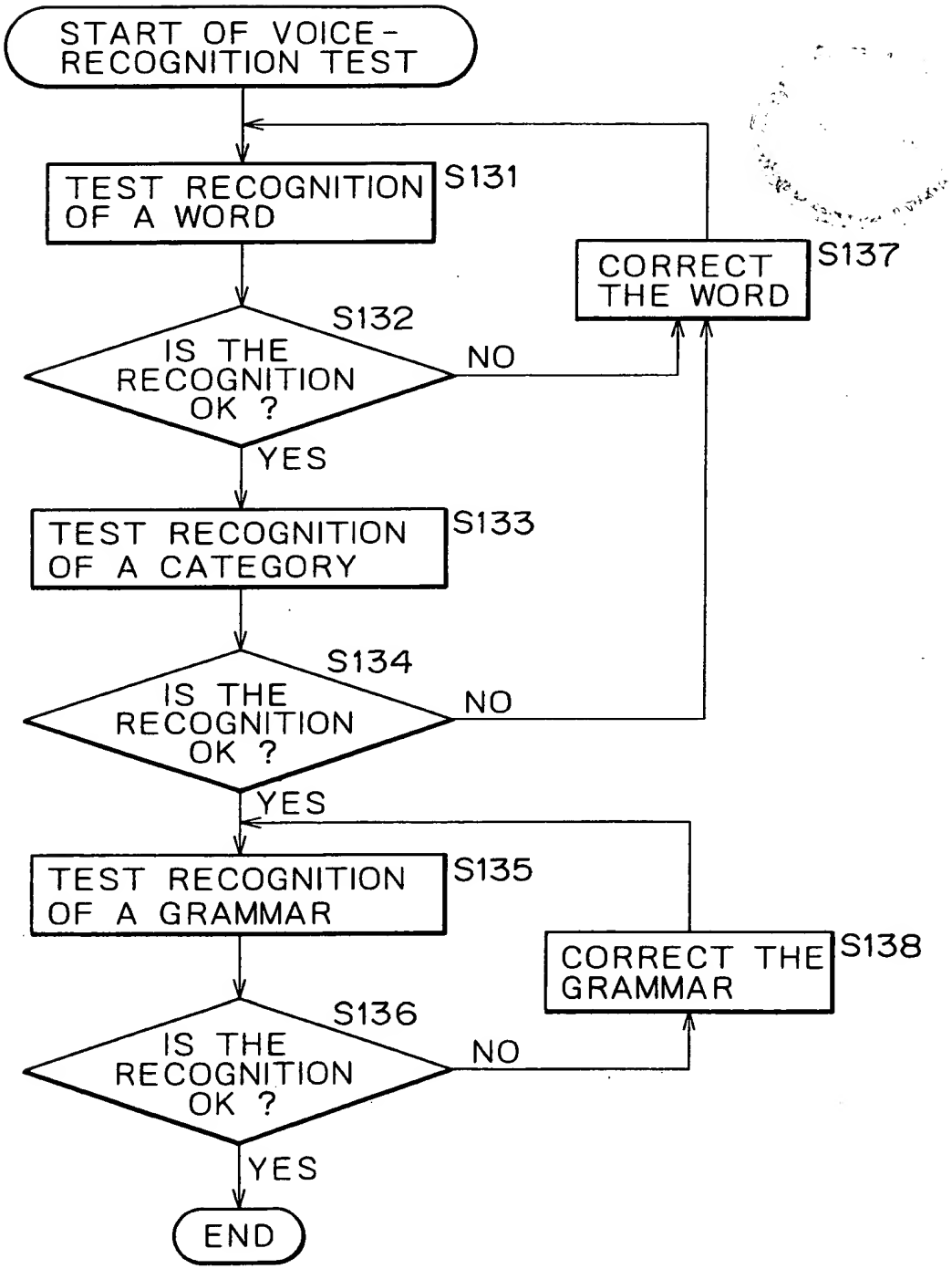

START OF VOICE-RECOGNITION TEST
TEST RECOGNITION OF A WORD
S131
IS THE RECOGNITION OK ?
S132
NO
YES
CORRECT THE WORD
S137
TEST RECOGNITION OF A CATEGORY
S133
IS THE RECOGNITION OK ?
S134
NO
YES
TEST RECOGNITION OF A GRAMMAR
S135
CORRECT THE GRAMMAR
S138
IS THE RECOGNITION OK ?
S136
NO
YES
END

FIG.52

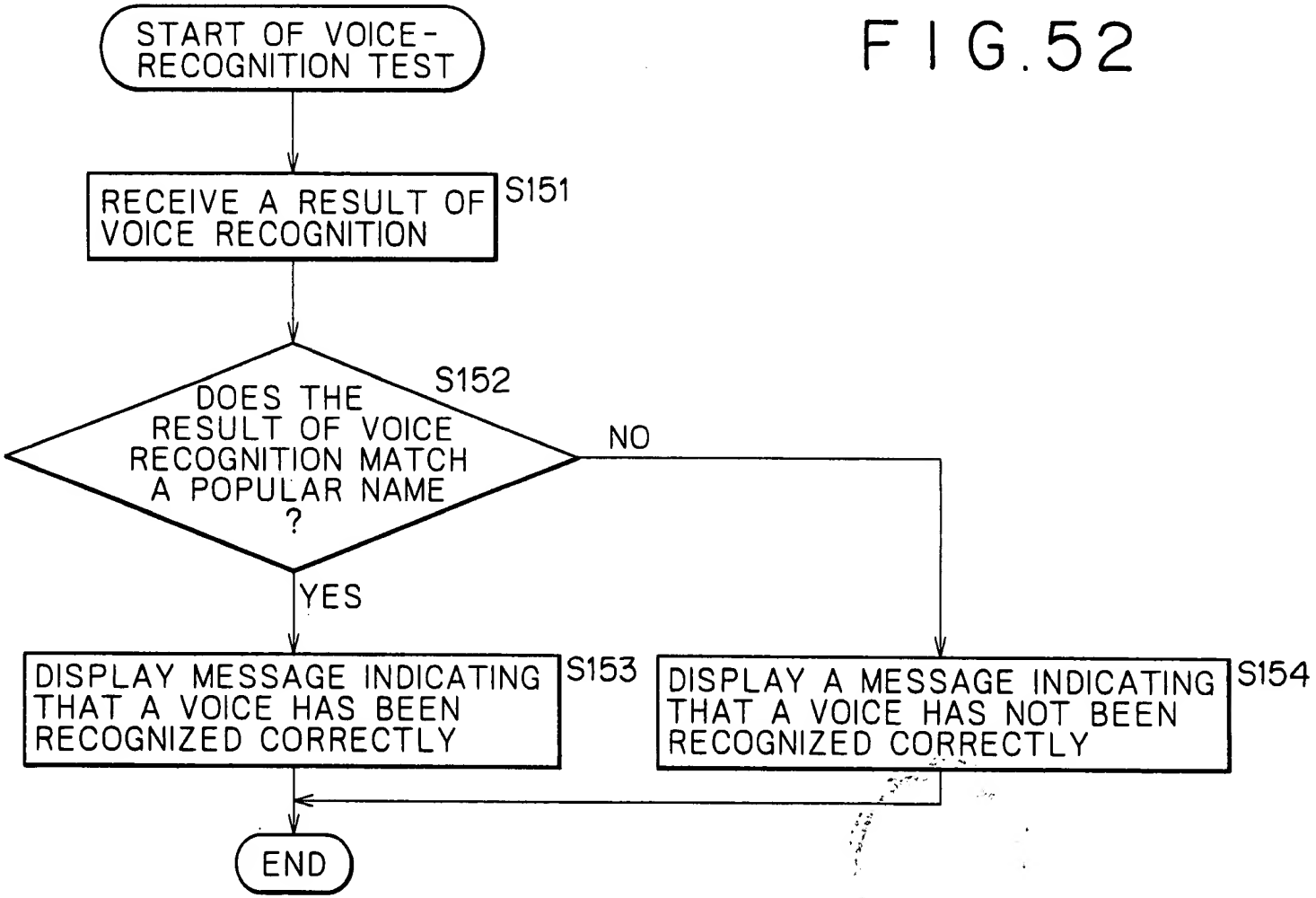

START OF VOICE-RECOGNITION TEST
RECEIVE A RESULT OF VOICE RECOGNITION
S151
DOES THE RESULT OF VOICE RECOGNITION MATCH A POPULAR NAME ?
S152
NO
YES
DISPLAY MESSAGE INDICATING THAT A VOICE HAS BEEN RECOGNIZED CORRECTLY
S153
DISPLAY A MESSAGE INDICATING THAT A VOICE HAS NOT BEEN RECOGNIZED CORRECTLY
S154
END

FIG.53

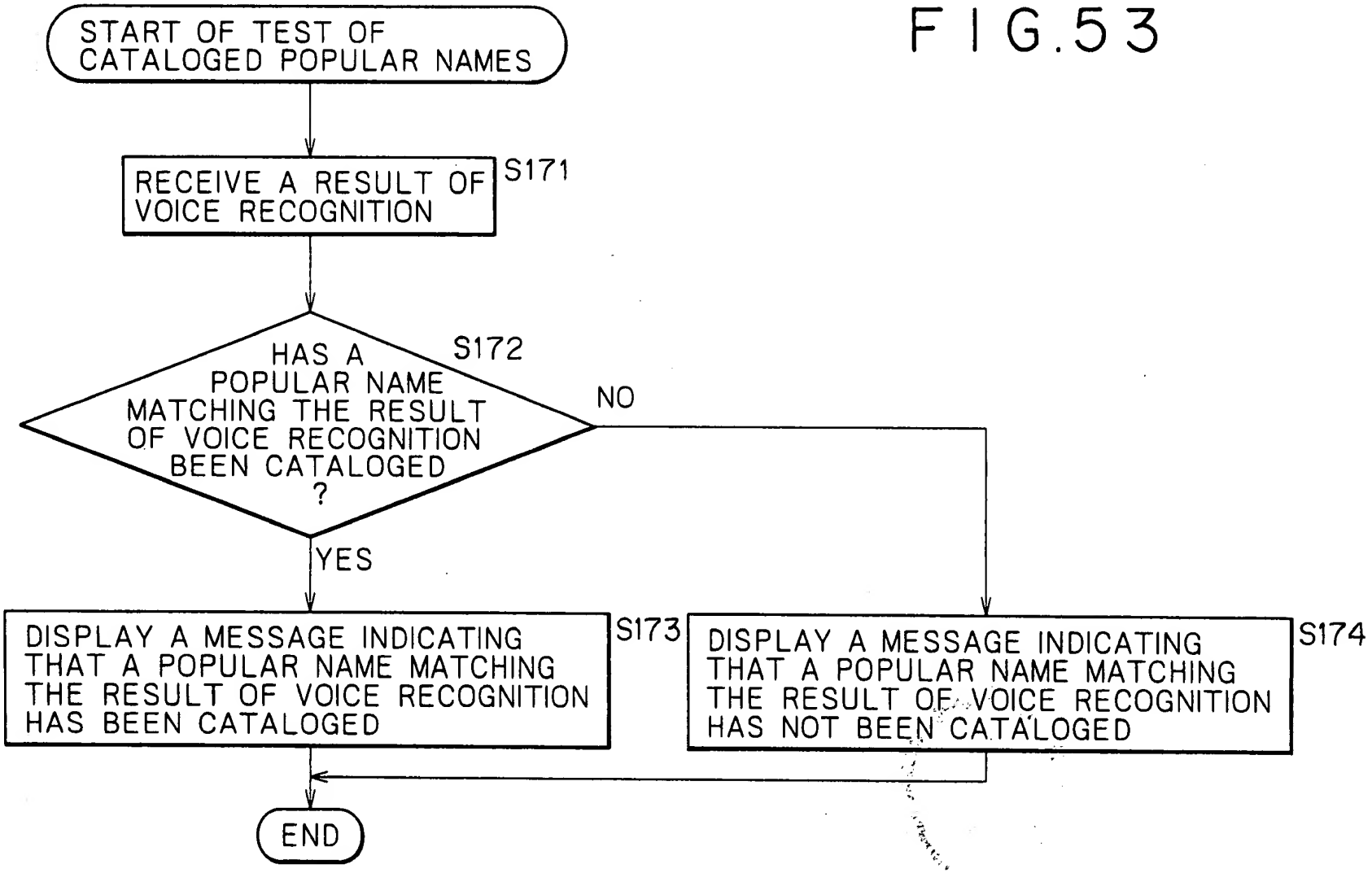

START OF TEST OF CATALOGED POPULAR NAMES
RECEIVE A RESULT OF VOICE RECOGNITION
S171
HAS A POPULAR NAME MATCHING THE RESULT OF VOICE RECOGNITION BEEN CATALOGED ?
S172
NO
YES
DISPLAY A MESSAGE INDICATING THAT A POPULAR NAME MATCHING THE RESULT OF VOICE RECOGNITION HAS BEEN CATALOGED
S173
DISPLAY A MESSAGE INDICATING THAT A POPULAR NAME MATCHING THE RESULT OF VOICE RECOGNITION HAS NOT BEEN CATALOGED
S174
END

FIG. 54

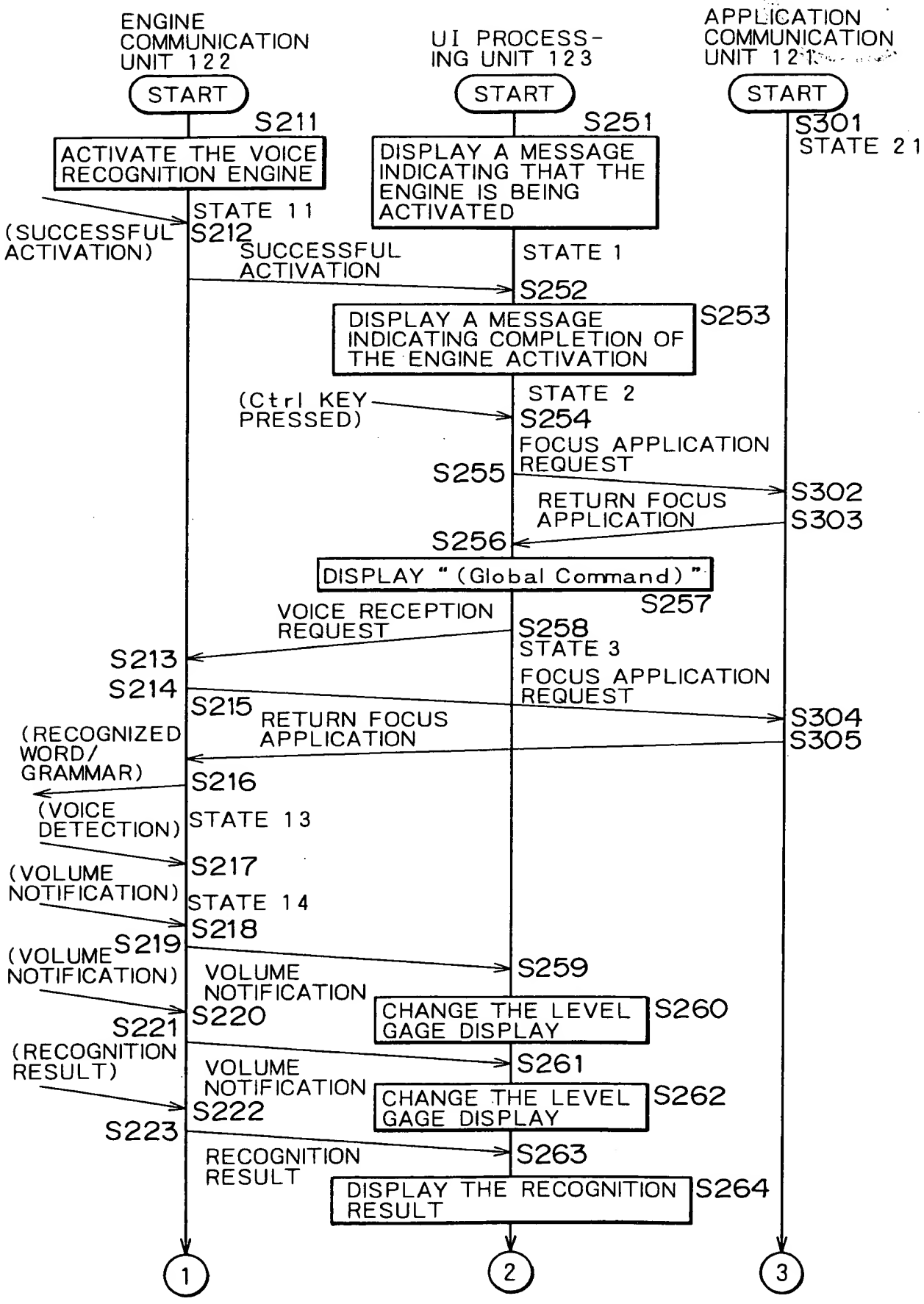
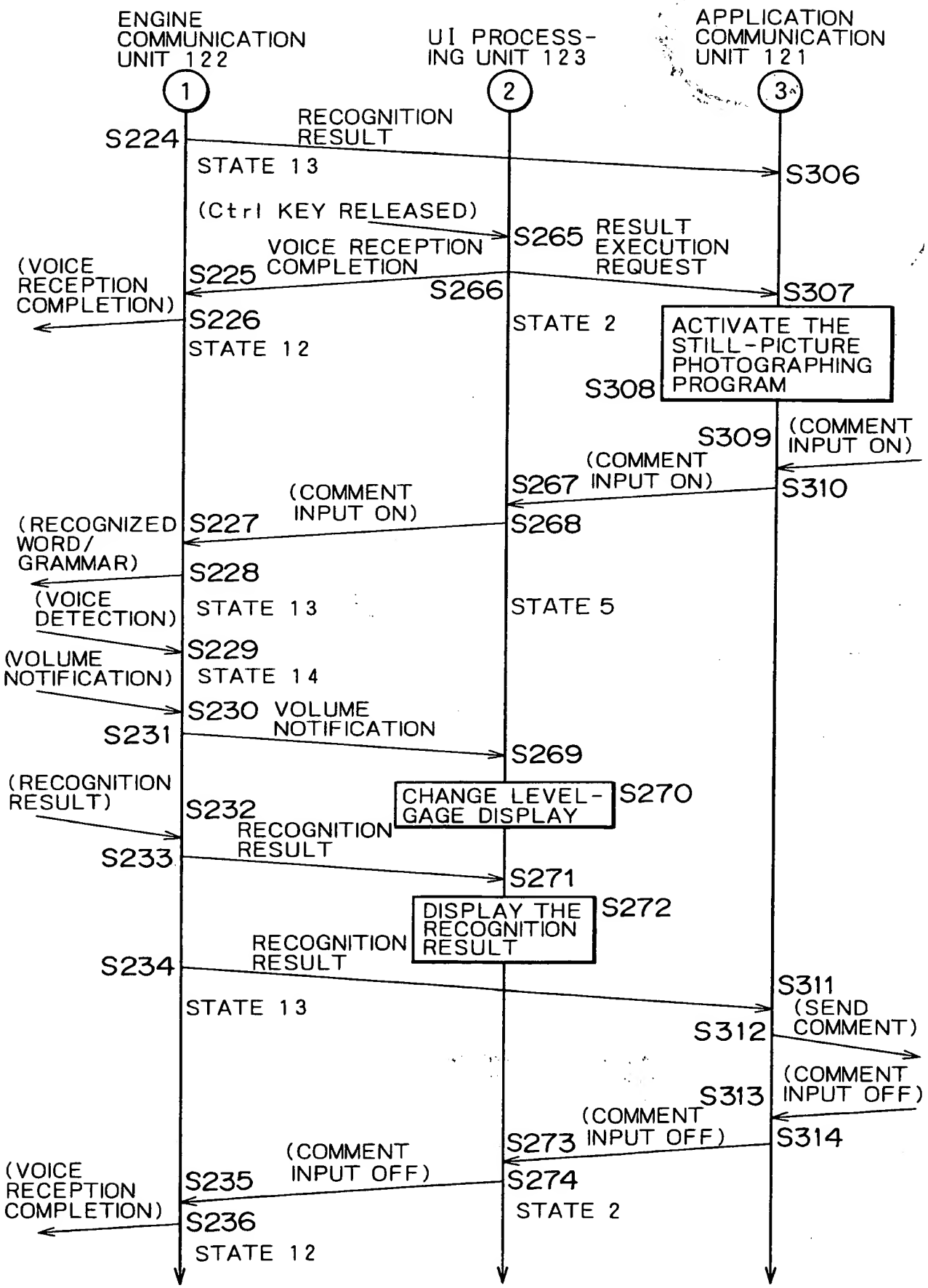

ENGINE COMMUNICATION UNIT 122
UI PROCESSING UNIT 123
APPLICATION COMMUNICATION UNIT 121
START
START
START
S211
ACTIVATE THE VOICE RECOGNITION ENGINE
S251
DISPLAY A MESSAGE INDICATING THAT THE ENGINE IS BEING ACTIVATED
S301
STATE 21
STATE 11
(SUCCESSFUL ACTIVATION)
S212
SUCCESSFUL ACTIVATION
STATE 1
S252
DISPLAY A MESSAGE INDICATING COMPLETION OF THE ENGINE ACTIVATION
S253
(Ctrl KEY PRESSED)
STATE 2
S254
FOCUS APPLICATION REQUEST
S255
S302
RETURN FOCUS APPLICATION
S303
S256
DISPLAY "(Global Command)"
S257
VOICE RECEPTION REQUEST
S258
STATE 3
S213
S214
FOCUS APPLICATION REQUEST
S215
RETURN FOCUS APPLICATION
S304
S305
(RECOGNIZED WORD/ GRAMMAR)
S216
(VOICE DETECTION)
STATE 13
S217
(VOLUME NOTIFICATION)
STATE 14
S218
S219
(VOLUME NOTIFICATION)
VOLUME NOTIFICATION
S259
S220
CHANGE THE LEVEL GAGE DISPLAY
S260
S221
(RECOGNITION RESULT)
VOLUME NOTIFICATION
S261
S222
CHANGE THE LEVEL GAGE DISPLAY
S262
S223
RECOGNITION RESULT
S263
DISPLAY THE RECOGNITION RESULT
S264
1
2
3

FIG. 55


ENGINE COMMUNICATION UNIT 122
UI PROCESSING UNIT 123
APPLICATION COMMUNICATION UNIT 121
1
2
3
S224
RECOGNITION RESULT
S306
STATE 13
(Ctrl KEY RELEASED)
S265
RESULT EXECUTION REQUEST
VOICE RECEPTION COMPLETION
(VOICE RECEPTION COMPLETION)
S225
S266
S307
S226
STATE 12
STATE 2
ACTIVATE THE STILL-PICTURE PHOTOGRAPHING PROGRAM
S308
S309
(COMMENT INPUT ON)
(COMMENT INPUT ON)
S267
S310
(COMMENT INPUT ON)
(RECOGNIZED WORD/ GRAMMAR)
S227
S268
S228
(VOICE DETECTION)
STATE 13
STATE 5
S229
(VOLUME NOTIFICATION)
STATE 14
S230
VOLUME NOTIFICATION
S231
S269
(RECOGNITION RESULT)
CHANGE LEVEL-GAGE DISPLAY
S270
S232
RECOGNITION RESULT
S233
S271
DISPLAY THE RECOGNITION RESULT
S272
RECOGNITION RESULT
S234
S311
(SEND COMMENT)
STATE 13
S312
(COMMENT INPUT OFF)
S313
(COMMENT INPUT OFF)
S273
S314
(COMMENT INPUT OFF)
(VOICE RECEPTION COMPLETION)
S235
S274
S236
STATE 2
STATE 12